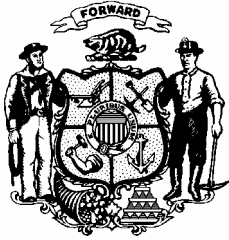


April  
2004

**PUBLIC SERVICE COMMISSION OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES**



Final Environmental Impact Statement  
**Power Ventures Group  
Generation Project**

**Docket 05-CE-131  
Date Issued April 2004**



PUBLIC SERVICE COMMISSION OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES

# Power Ventures Group Generation Project

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Public Service Commission of Wisconsin  
610 North Whitney Way  
P.O. Box 7854  
Madison, Wisconsin 53707-7854  
Phone 608.266.5481 • Fax 608.266.3957 • TTY 608.267.1479  
E-mail: [pcsrecs@psc.state.wi.us](mailto:pcsrecs@psc.state.wi.us)  
Home Page: <http://www.psc.wi.gov>

Wisconsin Department of Natural Resources  
101 South Webster Street  
P.O. Box 7921  
Madison, Wisconsin 53707-7921  
Phone 608.266.2621 • Fax 608.267.3579 • TTY 608.267.6897  
E-mail: [www.ugores@dnr.state.wi.us](mailto:www.ugores@dnr.state.wi.us)  
Home Page: <http://www.dnr.wi.gov>

This Environmental Impact Statement for the proposed Power Ventures Group Generation Project, to construct and operate a large electric power generating facility complies with the Public Service Commission's requirement under Wis. Stats. § 1.11 and Wis. Adm. Code § PSC 4.30.

By: Kathleen J. Zuelsdorff  
Kathleen J. Zuelsdorff  
WEPA Coordinator  
Public Service Commission of Wisconsin

April 16, 2004  
Date

Questions about information provided in this Environmental Impact Statement should be directed to:

William Fannucchi  
(Environmental)  
Public Service Commission  
(608) 267-3594

or

Jim Lepinski (Engineering)  
Public Service Commission  
(608) 266-0478

Steve Ugoretz  
Department of Natural Resources  
(608) 266-6673

# To the Reader:

This final Environmental Impact Statement (EIS) fulfills part of the requirements of the Wisconsin Environmental Policy Act (WEPA) Wis. Stat. § 1.11. WEPA requires state agencies to consider environmental factors when making major decisions. The purpose of this EIS is to provide the decision makers, the public, and other stakeholders with an analysis of the social, cultural, and environmental impacts that could result from the construction of a new power plant and its associated facilities. This document has been prepared jointly by the Public Service Commission of Wisconsin (Commission or PSC) and the Wisconsin Department of Natural Resources (DNR).

General questions on the EIS should be addressed to:

Udaivir Sirohi  
Public Service Commission  
P.O. Box 7854  
Madison, WI 53707-7854  
e-mail address:  
[udaivirsingh.sirohi@psc.state.wi.us](mailto:udaivirsingh.sirohi@psc.state.wi.us)

Please use the PSC docket number 05-CE-131 on all e-mail and correspondence. Specific questions on the EIS should be addressed to:

William Fannucchi (Environmental)  
Public Service Commission  
(608) 267-3594  
e-mail address:  
[william.fannucchi@psc.state.wi.us](mailto:william.fannucchi@psc.state.wi.us)

Steven Ugoretz  
Department of Natural Resources  
(608) 266-6673  
e-mail address: [ugores@dnr.state.wi.us](mailto:ugores@dnr.state.wi.us)

The Commission decision on the merit of this project will be based on the record of a public hearing, which is scheduled for May 25, 2004 at 10:30 a.m., 1:30 p.m. and 6:30 p.m. in the auditorium of the Sheboygan Falls City Hall at 375 Buffalo Street in Sheboygan Falls, Wisconsin. This hearing satisfies the WEPA requirements of the PSC and DNR. The PSC issued a Notice of Hearing for this project on April 1, 2004. The EIS, as well as testimony from the public hearings, will be included in the hearing record. A Commission decision on the proposed project is expected in June or July of 2004.

If necessary, the DNR will hold a separate hearing on the application for an air pollution control permit.



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# Executive Summary

## PROPOSAL

On March 4, 2003, Power Ventures Group, LLC (PVG), a special purpose company owned by Burns & McDonnell Engineering Company Inc., applied to the Public Service Commission of Wisconsin (Commission) for a Certificate of Public Convenience and Necessity (CPCN) under Wis. Stat. § 196.491(3) and Wis. Admin. Code ch. PSC 111, to construct and operate a large electric power generating facility. The application is for a 530 megawatt (MW) power plant fueled by natural gas. The proposed project would consist of three 177 MW, General Electric Model 7FA, simple-cycle combustion turbine generator units. Only 354 MW (two turbines) would be installed initially. On April 3, 2003, the Commission determined PVG's application to be incomplete pursuant to Wis. Stat. § 196.49(3)(2)(a). On November 12, 2003, PVG filed supplements to their application and thereafter provided additional missing information to its supplemental filings. On December 11, 2003, after review by Commission and the Department of Natural Resources (DNR) staff, the application was determined to be complete.

PVG is classified as an "Exempt Wholesale Generator" under the Federal Public Utility Holding Company Act. As originally proposed, PVG would sell electric power generated by the plant at market-based rates to investor-owned utilities, municipal utilities, cooperative utilities, power marketers, and other purchasers for resale in Wisconsin and throughout the Midwest region. The development of this project as a wholesale merchant plant would not be dependent on any pre-existing power purchase arrangements with public utilities. As defined in Wis. Stat. § 196.491(1)(w), a wholesale merchant plant is a power plant that may sell power at wholesale to utilities but does not provide retail electric service and is not owned by a public utility.

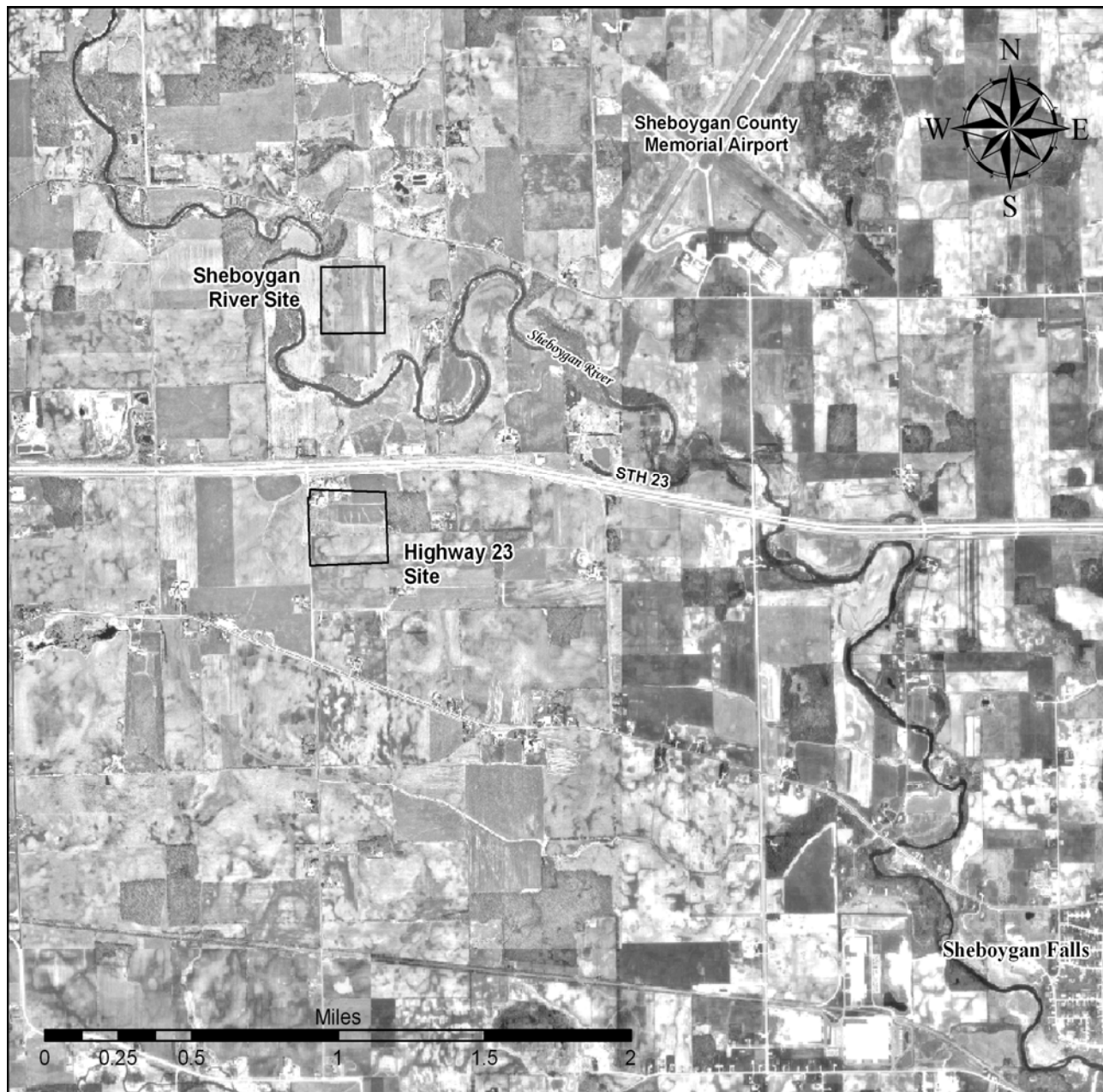
This project, however, may not be operated as a merchant plant. PVG is presently negotiating to sell the proposed project to Alliant Energy Generation (AEG). AEG would own the power plant but would then lease the project to Wisconsin Power & Light (WP&L) who would operate the power plant. WP&L is affiliated with AEG and is a Wisconsin utility. If this arrangement is finalized, the Commission, for the purpose of protecting ratepayer interests, would open a proceeding to review and approve, disapprove, or modify the arrangements between AEG and WP&L. Any new owner of an approved power plant would be bound by the terms and conditions of the Commission's CPCN order.

## PROJECT LOCATION

PVG has proposed that the power plant be located on one of two sites in Sheboygan Falls Township: the Highway 23 Site or the Sheboygan River Site (see Figure ES-1). The Highway 23 Site is

approximately 40 acres in size and is located on the south side of Highway 23 and east of Bridgewood Road. The Sheboygan River Site is approximately 30 acres in size and is located about 700 feet south of County Road O and 1,200 feet west of Alpine Road. This site is bordered on the west and northwest by the Sheboygan River.

**Figure ES-1 General location map**



## PROJECT DESCRIPTION

As proposed by PVG, either site could be approved for a maximum of three 177 MW gas-fired combustion turbines. Initially, PVG would install two turbines. If market conditions warrant, the owner may install a third 177 MW gas-fired turbine. There would be three exhaust stacks; each would

be about 75 feet in height. This peaking unit would be designed to operate on natural gas, which would be supplied through an existing natural gas pipeline owned by ANR Pipeline Company (ANR). There would be no alternate fuel. If the Highway 23 Site is selected, a new natural gas pipeline about 1,650 feet in length would be constructed (see Figure ES-2). The existing ANR transmission pipeline runs through the Sheboygan River Site. If that site is selected, no new natural gas pipelines would be needed outside the boundaries of the site.

Existing 345-138 kilovolt (kV) electric transmission lines are located along the eastern side of both sites (see Figure ES-2). Transmission facilities needed at both sites include an electrical switchyard and interconnection to the adjacent 345 kV transmission line. Transmission construction would take place either within the existing transmission right-of-way (ROW) or inside the plant construction site. No new transmission ROW would be needed. The transmission facilities would be owned and operated by the American Transmission Company (ATC). If this project is approved, the ATC will apply to the Commission for authority to build and operate the required transmission facilities.

## ENVIRONMENTAL ISSUES

### Air quality

PVG has applied for an air pollution control permit for the Highway 23 Site only. However, the two sites proposed in this case are close enough geographically that the air modeling conclusions drawn for the Highway 23 Site would also be applicable to the Sheboygan River Site. The modeling predicts that construction at either site would not exceed air quality standards in the area, subject to limitations that are detailed in the draft DNR air permit. The facility would not be a major source of hazardous air pollutants under Wis. Admin. Code Ch. NR 407. Because the hours of operation would be limited to a maximum of 1,795 hours per year, the proposed facility would qualify as a synthetic minor source under the current applicable classification, and would not require a Prevention of Significant Deterioration (PSD) Permit.

The U.S. EPA has proposed to designate Sheboygan County as a moderate non-attainment area for the 8-hour ozone standard. This would affect new or modified facilities in Sheboygan County classified as major sources of ozone precursors that receive air permits after the effective date of this designation. For a moderate ozone nonattainment area, this applies to emission sources of 100 t/yr. or greater of VOCs or NO<sub>x</sub>, which would include this facility. If the air permit for this facility is issued after the effective date of the nonattainment designation for Sheboygan County, the facility would need to meet Lowest Achievable Emission Rate (LAER) emission limits and obtain offsets for NO<sub>x</sub> and VOC; or be subject to air permit conditions which would make the facility a minor source of VOCs and NO<sub>x</sub> (see Air Quality in Chapter 3). At present, the effective date for the designation change is expected to be June 15, 2004.

### Water

At either site, PVG is proposing to drill two high-capacity wells to supply water to the facility. Only one well would be used at a time with the second well being reserved as a backup. The operation of the wells would be alternated to keep each well in working condition. The wells would be between 500 and 600 feet deep. Water use at the facility would be limited. The plant would use water at a rate of about 61 gallons per minute (gpm) during peak load. The total annual water usage for the plant is estimated at approximately 7,567,200 gallons. Based on a review of available data, the projected water use at the

proposed facility would not significantly affect the nearest municipal wells. In addition, projections of potential impacts to nearby residential wells suggest that negative impacts are unlikely. However, this conclusion is tentative at this time. PVG has constructed a test well at the Highway 23 site to test the potential for impacts to local groundwater supplies. On March 9, 2004, PVG conducted a 27-hour pump test, pumping water at a rate of 188 gallons per minute. A preliminary review of the results indicate that there were no impacts to area wells during the pumping test. PVG is willing to repair or replace any damage it causes to domestic wells within one-half mile of the project.

A Wisconsin Pollutant Discharge Elimination System (WPDES) discharge permit will be needed for the wastewater produced by various plant processes.

Storm water runoff at either site would be controlled by a system of ditches and a water detention pond that would be installed at either site. The detention pond would allow sediment to settle before the water is discharged to nearby drainage ways. DNR review of the construction storm water system has determined that the applicant's storm water pollution prevention plans are adequate and that discharge from the plant would not negatively impact surface waters of the state.

## **Vegetation, wildlife and endangered and threatened species**

There are no known occurrences of endangered, threatened, or special concern animals or plants on either project site. Because the land has been under cultivation for a long period, loss of wildlife habitat is not an issue.

## **Wetlands**

No wetlands are located on either project site.

## **Agriculture**

Both the Highway 23 and the Sheboygan River Sites are on agricultural properties. The project would take about 30 acres of agricultural land out of production. This impact is not considered significant.

## **Special construction issues**

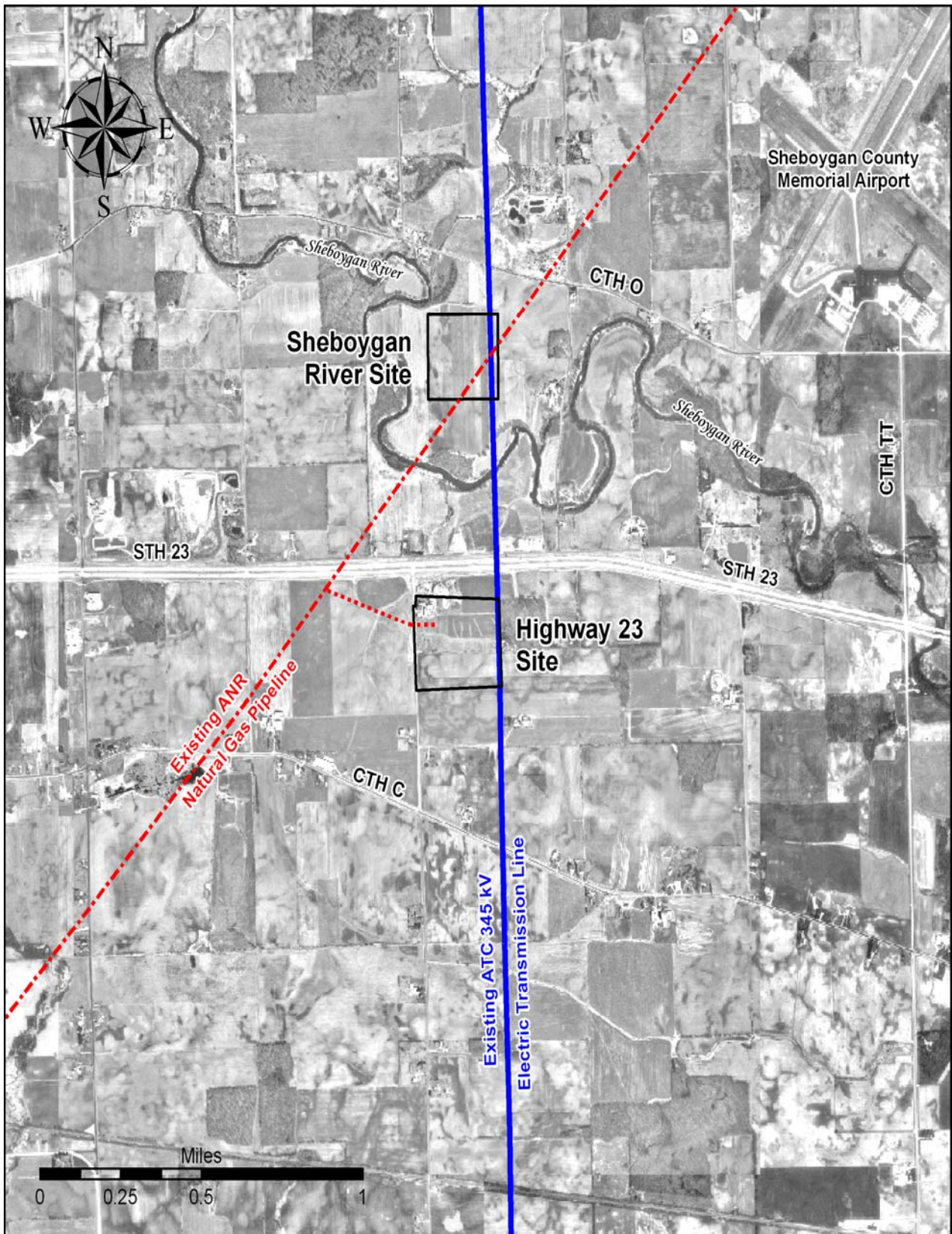
Significant special construction issues have not emerged for either site. The Sheboygan River Site is very close to the Sheboygan River. This would require diligent implementation of the approved stormwater management plans during construction and operation to ensure that they are appropriately applied, and are adequate to protect surface water quality.

## **Land use**

Use of the Highway 23 Site appears to be more consistent with local land use plans than the Sheboygan River Site. Recent zoning changes have zoned the Highway 23 Site for industrial development. In addition, existing commercial developments along Highway 23 make this site a better fit, in terms of existing land use, for industrial development. The Sheboygan River Site is adjacent to a riverine environment and is zoned for agricultural uses.



Figure ES-2 Project summary map



## LOCAL COMMUNITY SERVICES

### Fire and Safety

The proposed facility is expected to be self-sufficient. The need for emergency services after construction would be minimal. An automated fire suppression and protection system would be installed for use during plant operations. Fire suppression water would be supplied by the on-site wells and by a 500,000 gallon storage tank at the site. The project is not expected to have an adverse impact on local emergency services budgets or function.

### Airport

The Wisconsin Department of Transportation Bureau of Aeronautics has determined that neither site would affect aircraft safety with respect to aircraft arriving or departing from the Sheboygan County Memorial Airport.

### Roads

Heavy equipment and delivery of materials including the turbines would be limited to the construction period. Road damage is not expected as a result of the project. However, should damage to roads occur because of construction traffic, the applicant has agreed to repair damaged roads and return them to their original condition. Construction traffic is not expected to be severe. Operational traffic would be limited to a small number of vehicles each day.

### Noise

Projected increases in ambient noise levels near the proposed plant are expected to be small for both sites. These slight increases would occur during the periods when the plant is running. Increases to ambient noise levels at both sites are expected to be in the range of 0 and 4 Decibels A-weighted (dBA). Increases in this range should be barely noticeable.

### Visual impact

Regardless of the site chosen, the new plant would be a new feature in the local visual landscape and would be visible from local roads. The plant would be visible from Highway 23 for the Highway 23 Site and from County O and Alpine Road for the Sheboygan River Site. Three 75-foot tall exhaust stacks would be the tallest features on the site. Both plants would be easily visible from nearby residences. Construction of sight screening berms and plantings of trees and shrubs around the perimeter of the facility could soften the visual impact.

### Historic properties

A review of state historical and archeological databases has discovered no known occurrences of historic resources on or near either site.

### Shared revenue

Payments by the state to the county and township would be approximately \$708,000 per year. Approximately \$467,280 per year would go to Sheboygan County and approximately \$240,720 per year

would be paid to the town of Sheboygan Falls. Payments from the state would begin the year after the plant begins operation and continue until the plant closes.

## **Connecting facilities**

For the Highway 23 Site, connecting facilities include 1,650 feet of new natural gas pipeline. For the Sheboygan River Site, no new pipeline connections would be required outside the site boundary. An electrical switchyard and interconnections to an existing 345 kV transmission line would be required for both sites. No new transmission ROW would be required at either site.

## **Commission decisions**

The Commission, in reviewing PVG's application for a CPCN, will decide, among other items, whether to approve construction of the plant, and where it is to be constructed the plant. If approved, the Commission would also determine whether to impose any conditions on the construction of these facilities.





# CHAPTER 1

## Chapter 1 – Background and Regulatory Requirements

### DESCRIPTION OF THE PROPOSED PROJECT

On March 4, 2003, Power Ventures Group, LLC (PVG), a special purpose company owned by Burns & McDonnell Engineering Company Inc., applied to the Public Service Commission of Wisconsin (Commission or PSC) for authority to construct a 530 MW power plant fueled with natural gas. The proposed project would consist of three 177 MW General Electric Model 7FA simple-cycle combustion turbine generator units. Only 354 MW (two turbines) would be installed initially. On April 3, 2003, the Commission determined PVG's application to be incomplete pursuant to Wis. Stat. § 196.49(3)(2)(a). On November 12, 2003, PVG filed supplements to the application and thereafter provided additional missing information and data to its supplemental filings. On December 11, 2003, after review by the Commission, the application was determined to be complete. The Commission docket number for this case is 05-CE-131.

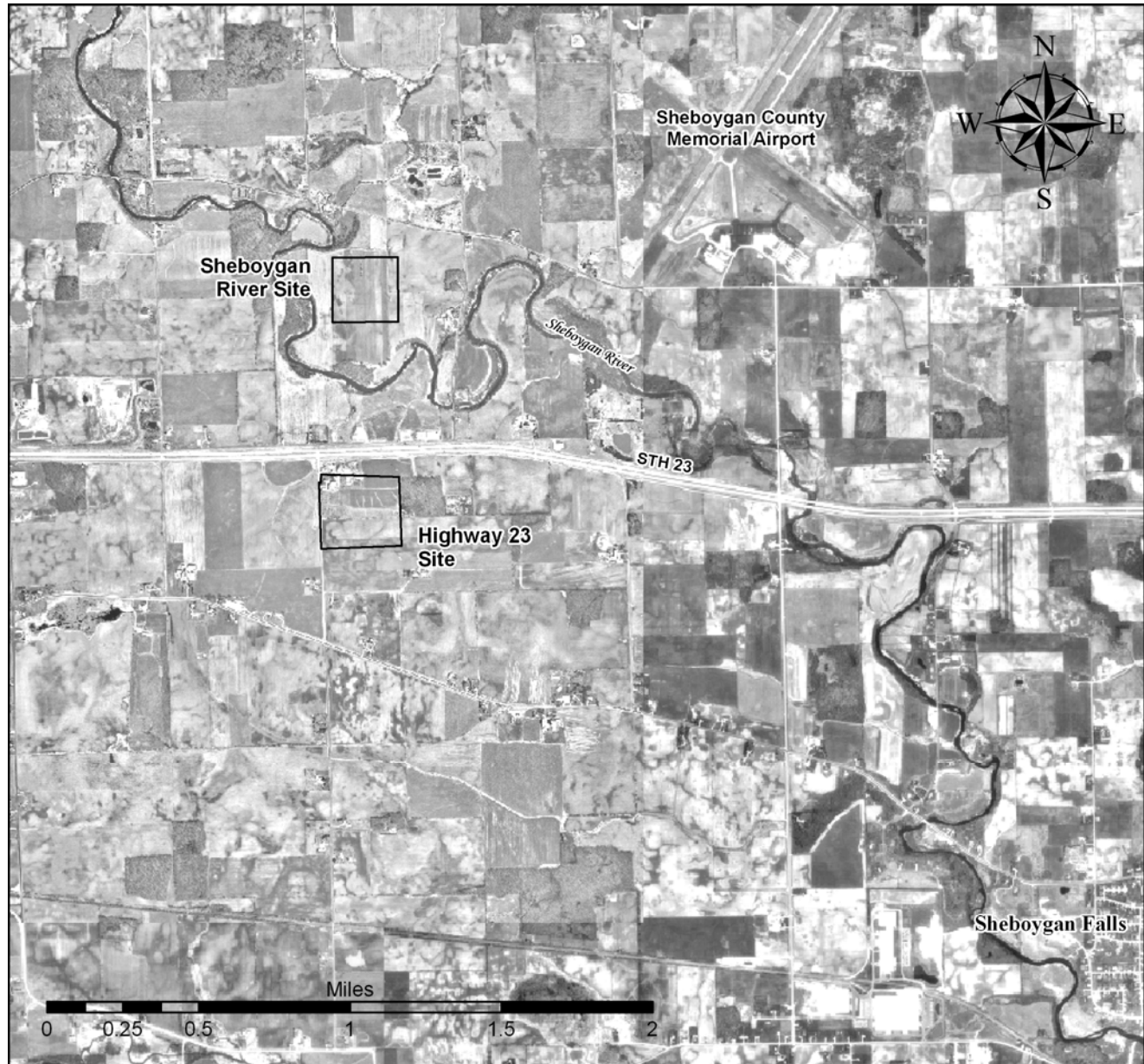
PVG is classified as an "Exempt Wholesale Generator" under the Federal Public Utility Holding Company Act. As originally proposed, PVG would sell electric power generated by the plant at market-based rates to investor-owned utilities, municipal utilities, cooperative utilities, power marketers, and other purchasers for resale in Wisconsin and throughout the Midwest region. The development of this project as a wholesale merchant plant would not be dependent on any pre-existing power purchase arrangements with public utilities. As defined in Wis. Stat. § 196.491(1)(w), a whole sale merchant plant is a power plant that may sell power at wholesale to utilities but does not provide retail electric service and is not owned by a public utility.

This project, however, may not be operated as a merchant plant. PVG is presently negotiating to sell the proposed project to Alliant Energy Generation (AEG). AEG would own the power plant but would then lease the project to Wisconsin Power & Light (WP&L) who would operate the power plant. WP&L is affiliated with AEG and is a Wisconsin utility. If this arrangement is finalized, the Commission, for the purpose of protecting ratepayer interests, would open a proceeding to review and approve, reject, or modify the arrangements between AEG and WP&L.

PVG has applied to the Commission for a Certificate of Public Convenience and Necessity (CPCN) under Wis. Stat. § 196.491(3) and Wis. Admin. Code ch. PSC 111, to construct and operate a large electric power generating facility.

Two potential sites located approximately 1.5 miles northwest of Sheboygan Falls have been identified. The Highway 23 Site is approximately 40 acres in size and the Sheboygan River Site is about 30 acres (see Figure 1-1).

**Figure 1-1 General location map**



The proposed plant would require a transmission interconnection with the existing electric system. The interconnection would be made to an existing double-circuit 345/138 kV transmission line that is located immediately adjacent to the proposed plant sites. The transmission line is owned and operated by the American Transmission Company (ATC). The interconnection would consist of a new switchyard on the power plant site and short 345 kV transmission line that connect the new switchyard to the transmission system. Natural gas would be supplied to the Highway 23 Site by a new 16-inch pipeline lateral connected to an existing interstate natural gas pipeline owned by ANR Pipeline Company

(ANR). For the Sheboygan River Site, all natural gas pipeline construction would take place within the site boundaries (see Figure 1-1).

## PROPOSED SCHEDULE

Draft EIS issued February 2004

Final EIS issued April 2004

Public hearings May 2004

Commission decision and order June or July 2004

If the project is approved, PVG intends to begin construction by June 2004, with commercial operation beginning approximately one year later.

## CONSTRUCTION CASE PROCESS

### Application for Commission certification

Anyone proposing to build a power plant of 100 MW or more in Wisconsin must obtain approval from the Commission in the form of a CPCN before construction can begin. The Commission makes the final decision about whether a power plant is built and where it is sited. This decision is made by a three-member panel of commissioners who are appointed by the governor and approved by the Senate for staggered six-year terms. The commissioners are assisted in their decision-making process by a staff of engineers, scientists, and financial experts.

Project developers must file a detailed CPCN construction application with the Commission. Once the Commission deems an application complete under Wis. Stat. § 196.491(3), it must complete its review process within 180 days. Court approval is needed to extend the review time to a maximum of 360 days. If the Commission does not obtain a court extension or does not make a decision within this time period, the project is automatically approved as proposed by the applicant.

### DNR permitting authority

The developer of a proposed power plant must obtain several permits from the DNR. Because the facility is specifically not exempt from the construction permit requirement, the applicant must obtain an air pollution control construction permit from the DNR before construction can begin. The DNR must also issue a high-capacity well approval before wells can be constructed for the project. The DNR will also conduct a Wisconsin Pollutant Discharge Elimination System (WPDES) permit review of the proposed wastewater treatment system and discharge. A permit for stormwater and erosion control facilities used during plant operations must also be issued, but is not required before construction. PVG has applied for DNR construction permits. Other DNR permits may be required for various periods of the power plant project, depending on circumstances and expected impacts.

### Department of Commerce

Storm water management during construction falls under Department of Commerce (Commerce) jurisdiction. Applicants are required to submit a Notice of Intent (NOI) for construction of a commercial building to Commerce stating that storm water management plans have been prepared. Commerce does not review storm water management plans and does not conduct site inspections

during construction. PVG has submitted an NOI for this project and has received acknowledgement of that notice from Commerce.

## **WISCONSIN ENVIRONMENTAL POLICY ACT**

### **Environmental impact statement**

The Wisconsin Environmental Policy Act (WEPA), Wis. Stat. § 1.11, requires all state agencies to consider the environmental impacts of major actions that could significantly affect the quality of the human environment. A proposal for a power plant on a new site requires preparation of an environmental impact statement (EIS) under Wis. Admin. Code § PSC 4.10. The Commission and the DNR have prepared this EIS jointly with the Commission functioning as the lead agency. Based on the information provided, this EIS describes the proposed project to the extent known, discusses possible alternatives to the proposed action, and evaluates the project impacts on the natural and human environment.

The EIS process has several stages: a draft EIS is produced and circulated for comment; all comments are considered in preparing a final EIS which is also distributed for review; and a public hearing is held in the project area.

The purpose of the EIS is to inform the Commissioners and the public of the potential effects of the proposed project. After the draft EIS is issued, there is a public comment period of 45 days. After the final EIS is issued, there is at least a 30-day review period to allow individuals to read the final EIS and prepare for the public hearing. The Commission provides notice to the public and holds a public hearing in the project area. The hearing is the opportunity for the public to make their views known to the Commissioners. On December 12, 2003, the Commission and DNR began preparation of this draft EIS.

### **Public participation opportunities**

As part of agency scoping responsibilities under Wis. Admin. Code § PSC 4.30(2) and NR 150.21(3), the Commission and DNR, before preparing the draft EIS, solicit comments from persons interested in the proposed action. The Commission also distributes copies of the project application to local clerks and libraries for inspection by the public. On December 19, 2003, the Commission mailed notices about the preparation of the draft EIS to nearby landowners and other interested parties. The notice also provided information on how local residents could participate in the process. A public information meeting, sponsored by the applicant, regarding the project was held in the town of Sheboygan Falls in February 2003 to provide local residents with information on the proposed project.

### **Commission decision**

After the hearing is complete and transcripts of the hearing record are reviewed, the three commissioners will meet to make a decision to approve, modify, or reject the proposed project based on information presented at the hearing. That meeting will be held at the Commission's office in Madison and is open to public observation. After the Commission's decisions are made, an order to the applicants will be prepared and issued. If the project is approved, construction may begin after the Commission order is issued, subject to any conditions the Commission imposes.

## PUBLIC INVOLVEMENT THROUGH OTHER REGULATORY AGENCIES

An air pollution control construction permit is part of this project review and must be obtained before construction can begin. A high-capacity well approval must also be acquired before wells can be constructed. Anticipated air pollutant emissions are described in this EIS.

Other state level permits would be needed to build or operate the plant but are not required before plant construction can begin. Some permits are required before specific plant components are installed, constructed, or operated. Federal and state agency permits and approvals needed for this project are listed in Tables 1-1 and 1-2.

### Federal interests

Two federal government agencies also have regulatory interests in this project that they will act on directly or will delegate to state agencies. These interests can be varied, depending on the sites and the type of facilities proposed. Table 1-1 indicates the federal agencies involved in this project to date.

**Table 1-1 Federal government agencies involved in the project**

Agency	Interest or Permit	Contact
U.S. Environmental Protection Agency	Clean Air Act New Source Performance Standards - delegated to DNR	See DNR below in Table 1-2
	Clean Air Act Acid Rain Permit - delegated to DNR	See DNR below in Table 1-2
Federal Aviation Administration	Reviewing heights of proposed facilities; assessing impacts on aviation and clearance standards; and requiring facility alterations as needed.	Richard Farrell, III Great Lakes Regional Office (847) 294-7566
Federal Energy Regulatory Commission	Exempt Wholesale Generator status – EWG	(202) 219-2700
	Market rate under Section 205 of the Federal Power Act qualifying facility status	
	Section 157 – blanket authorization certification – prior notice filing	
	Construction Certificate for Natural Gas Pipeline	

### National Historic Preservation Act compliance

Under Section 106 of the National Historic Preservation Act, the Wisconsin Historical Society (WHS) must be consulted by the lead federal agency, if the agency determines the project is an undertaking as defined in 36 CFR 800.16(v). The agency is responsible for initiating consultation with any Native American peoples that may have an interest in the area affected by the project and any other individuals that may be affected by impacts to historical or archaeological properties that are listed or eligible for listing on the National Register of Historic Places (NRHP). The agency must also consider Traditional Cultural Properties (TCP) when determining impacts. If an adverse effect is determined, treatment of the area of potential affect would be the subject of a memorandum of agreement among all the interested parties.

The requirements of Section 106, when invoked early in a project review at the Commission, supersede the requirements of the corresponding state law on historic preservation. If Section 106 is invoked, it

could cover all facets of this project, including the plant site, any new natural gas pipeline corridor, and any new transmission facilities that are required by the proposed plant. Discussions of historical and archeological considerations are in Chapters 2 and 3 of this draft EIS under the heading “Historical and Archeological Sites.” Although the results of any negotiations or agreement under Section 106 can be incorporated into the final EIS, it is possible that they would occur during federal agency review processes after the project received Commission approval. If no historic properties were potentially affected, the Section 106 process could be completed before a CPCN is issued.

## State interests

In addition to the substantial approval and permitting interests of Commerce and DNR, several other state agencies must approve plans, designs, or specific components of the proposed generating facilities and auxiliary equipment.

**Table 1-2 State agency approvals and permits required for construction of the proposed plant, electric transmission, water supply and discharge structures**

Agency	Approvals/Permits or Interests	Contact
Public Service Commission	s. 196.491 Wis. Stat. – Certificate of Public Convenience and Necessity for construction of large electric generating facility	Udaivir Sirohi 608-266-2806
	s. 196.49 Wis. Stat. - Certificate of Authority and s. 196.491 Certificate of Pubic Convenience and Necessity for transmission construction	
Department of Commerce	ch. COMM 61 Notice of Intent – Commercial Building Construction Site Storm Water and Erosion Control	Christine Severson 608-267-2497
	ch. COMM 61-65 – Plans for commercial buildings	Jim Quast (608) 266-9292
	ch. COMM 81-85 - Plan review and approval for construction of plumbing facilities and Fire suppression systems	Jim Quast (608) 266-9292
Department of Natural Resources	Air Quality – New Source Review - Construction and Operating permits ch. NR 405, 408, Wis. Adm. Code and acid rain permit NR 409	Jeffrey Hanson (608)266-6876
	Wastewater Discharge - Wis. Pollutant Discharge Elimination System (s. 283, Wis. Stats.)	Duane Schuettpelz (608) 266-0156
	Stormwater Management during operations - ch. NR 216	Sue Beaumier (414) 263-8682
	ch. NR 812 High capacity well permit	William Furbish (608) 266-9264
	Natural Heritage Inventory – Endangered and Threatened Species -ch. 29, Wis. Stats.	Jennifer Bardeen (608) 266-8736

## Local Interests

The Highway 23 Site has been rezoned by the township of Sheboygan Falls from A-1 Agriculture to B-1 Commercial/Industrial. This zoning change would allow, as a conditional use, construction of the proposed facility on this site. PVG has entered into negotiations with the Town of Sheboygan Falls in

order to obtain a Conditional Use Permit (CUP). PVG and the township have prepared a draft development agreement that sets the conditions of the CUP. The major issues covered in the development agreement include:

- reimbursement for any costs associated with damage to local infrastructure
- site restoration if the plant is closed
- adherence to local codes including such items as setbacks, security lighting, and landscaping
- recovery from negative impacts to local wells including replacement or repair for any damage to private water supplies within ½ mile
- access to facility water supply during fire emergencies
- site fencing

Construction on the Sheboygan River Site would require rezoning by the township from A1-Agriculture to B1 Commercial/Industrial. If the Sheboygan River Site is approved, it would also need a conditional permit.





# CHAPTER 2

## Chapter 2 – Project Description

### DESCRIPTION OF THE GENERATING FACILITIES

#### Proposed facilities

PVG proposes to construct a 530 MW, gas-fired, simple-cycle facility for operation as a peak power generating facility. Plant operation could be expected during periods of peak demand, or during periods when other generating units are not operating.

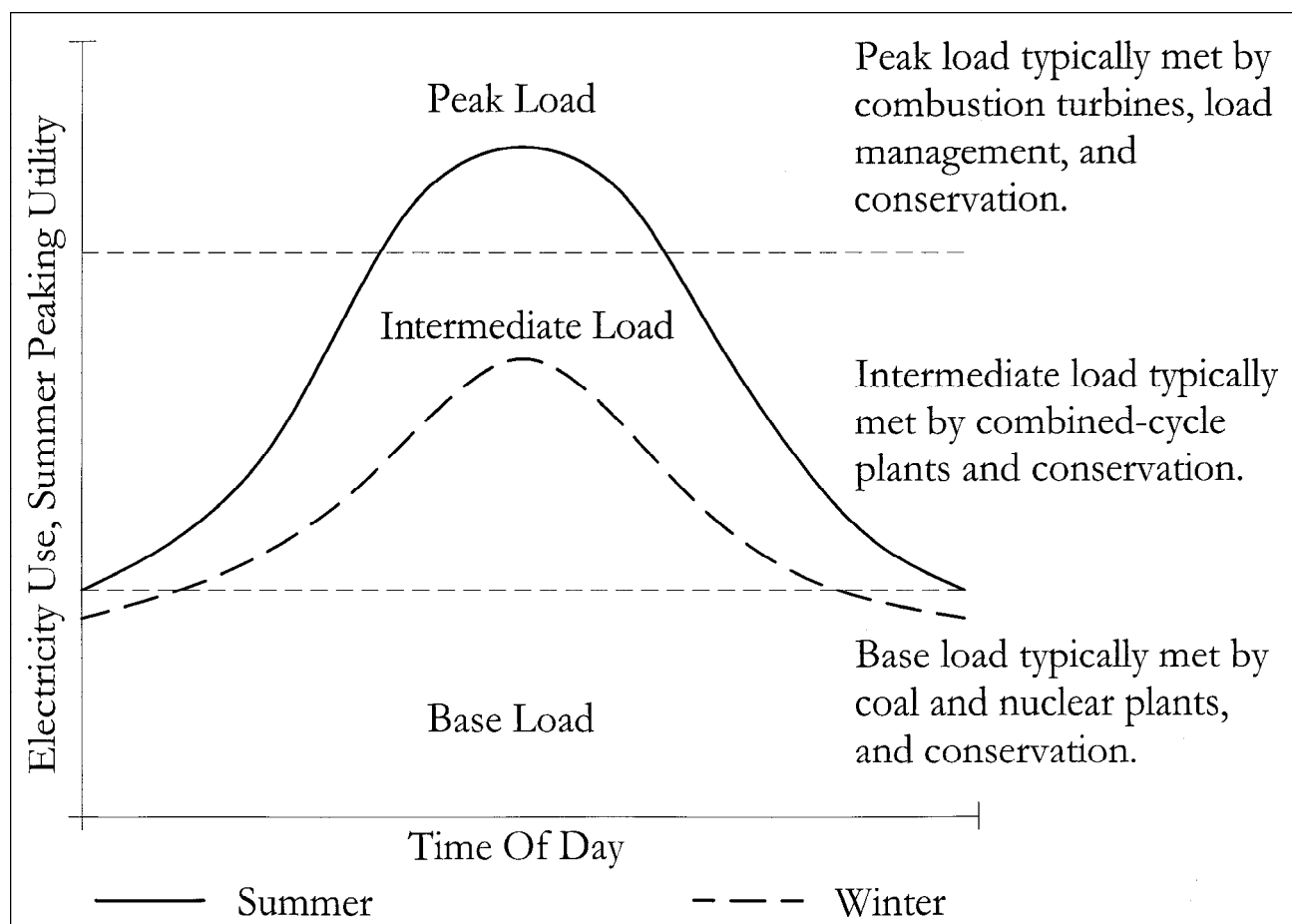
PVG proposes to initially install two generating units, each with a nominal generating capacity of approximately 177 MW. In addition, the plant may be expanded in the future with the addition of a third 177 MW simple-cycle generating unit. The expanded plant would also be operated as a peak power generating facility. PVG is requesting authorization to initially install the two generating units, and the third as market conditions allow. No additional Commission approval would be necessary to construct the third unit, as the impacts of the proposed project are being evaluated as though all three units would be constructed.

#### Types of generating facilities

The “load curve” in Figure 2-1 shows the total amount of electricity that electric customers demand at any given time of day from a utility such as Wisconsin Electric Power Company (WEPCO) that experiences its demand peak in the summer. The kinds of power plants that meet the demand illustrated in the “load curve” are known as base load plants, intermediate plants, and peaking plants.

Base load plants provide a base level of electricity to the system and are typically large generating units. Historically, nuclear or coal have powered base load plants. Base load plants tend to be operated continuously except when down for scheduled maintenance or an unplanned (forced) outage. They have a relatively high “capacity factor,” typically in the range of 60 percent or greater. The capacity factor is the ratio of the amount of power actually produced in a given period to that which could have been produced if the plant operated at 100 percent power for 100 percent of the time.

**Figure 2-1 Typical summer and winter electric load curves**



Base load plants have access to comparatively lower cost fuel and, combined with their higher capacity factors, are able to produce power at lower unit costs than intermediate and peaking plants.

Intermediate plants are plants constructed specifically for cyclic operation and may be older, less efficient plants. They are normally operated only during times of elevated demand and therefore, have a lower capacity factor than base load plants, typically in the 25 to 50 percent range.

Peaking plants are designed to provide the additional power needed during peak system demand periods, such as those caused by heating and lighting during winter months or air conditioning use during summer months or when maintenance is being performed on base load plants. The capacity factor of peaking plants is fairly low, typically less than 15 percent. These plants are more economical to build than base load or intermediate load plants but are usually more expensive to operate.

## Generic description of simple-cycle technology

A simple-cycle combustion turbine is made up of four basic components: the compressor, the combustor, the gas turbine, and the generator. The compressor, gas turbine and generator are mechanically linked. The compressor provides high pressure air to the combustor where it is mixed with fuel. The fuel-air mixture is burned in the combustor and directed to the gas turbine. As the expanding gasses from combustion pass over blades attached to the rotor inside the gas turbine, the

rotor spins and drives the generator which produces electricity. A diagram depicting a simple-cycle generator is included in Figure 2-4.

### **Size of units and dimensions of proposed plant**

The proposed simple-cycle facilities would be the similar for both sites, and would consist of three combustion turbines and generators with a total generating capacity of approximately 530 MW. PVG has decided to enclose the combustion turbines in a generation building that will improve aesthetics and decrease expected sound levels.

Figures 2-2 and 2-3 show the preliminary site layouts for the Highway 23 and Sheboygan River Site alternatives, respectively.

### **Plant fuel**

Natural gas from the supply market would be used to fuel the proposed plant. The simple-cycle plant configuration at either site is expected to have a maximum hourly fuel consumption rate of 4,791 million BTU per hour (1,597 million BTU per hour for each of the three units, at an ambient temperature of 59°F) or 4.8 million cubic feet per hour (1.6 million cubic feet per hour for each unit). At an estimated 1,795 hours of operation per year, the maximum annual fuel use for either site is estimated to be approximately 8,623,800 million BTU per year, or approximately 8,600 million cubic feet per year. Expressed in dekatherms, annual natural gas consumption of the simple-cycle facilities at either site are expected to be approximately 8,623,800 dekatherms per year. By comparison, an average residential natural gas customer uses approximately 100 dekatherms per year.

### **Plant alternate fuel**

No alternate or back-up fuel is proposed for operating the simple-cycle facilities at either site.

Figure 2-2 Preliminary simple-cycle facilities layout for the Highway 23 Site

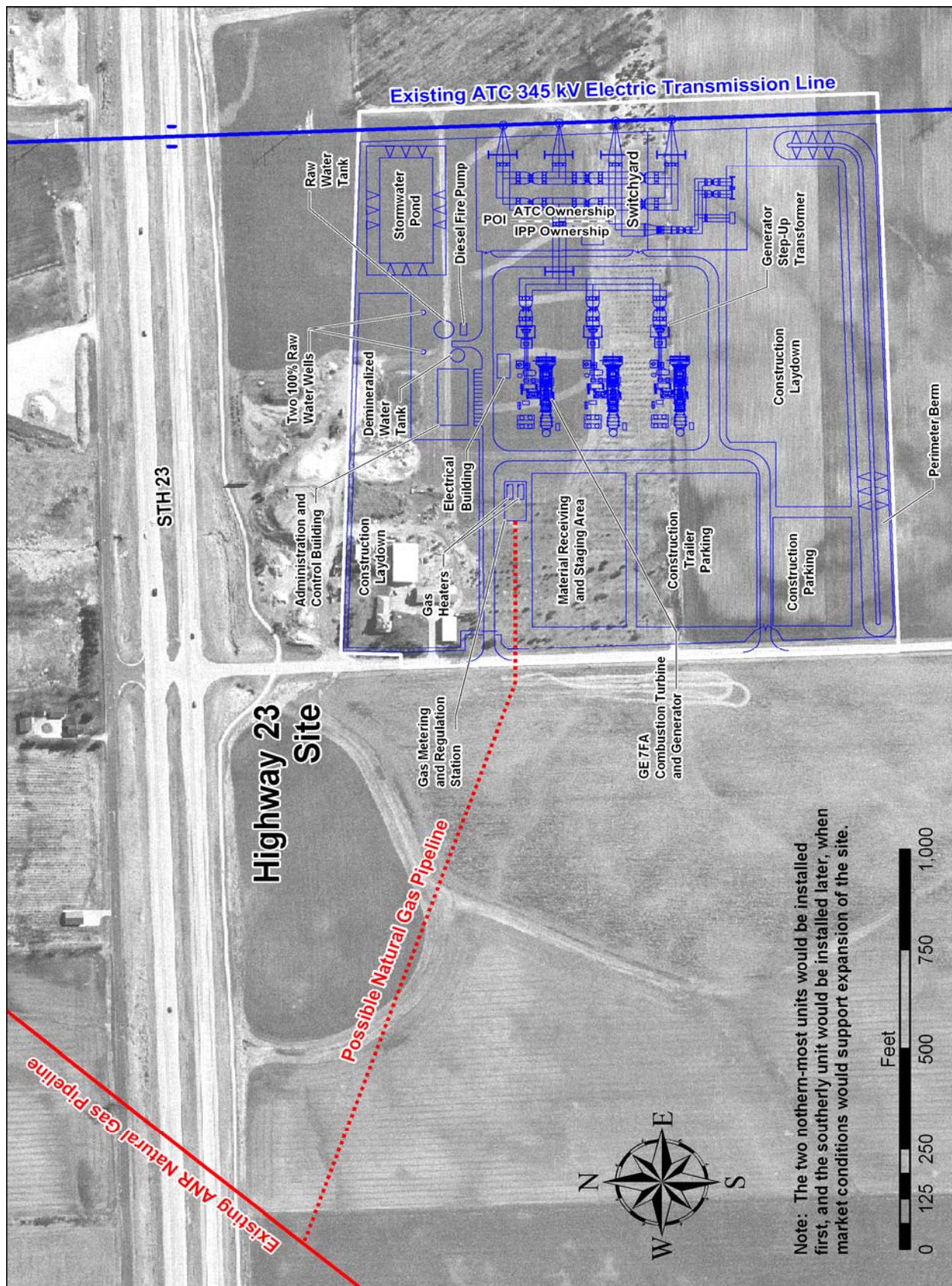
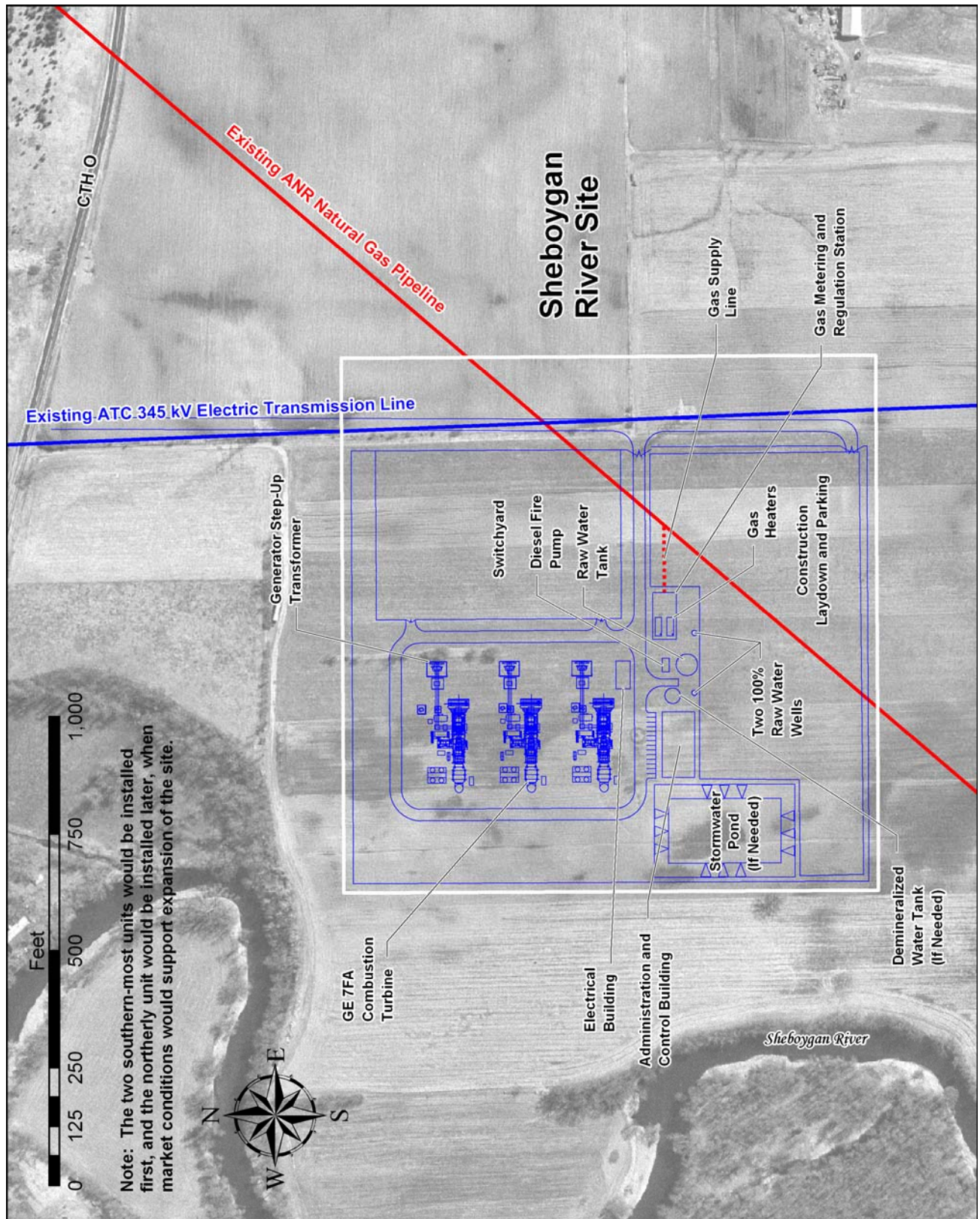
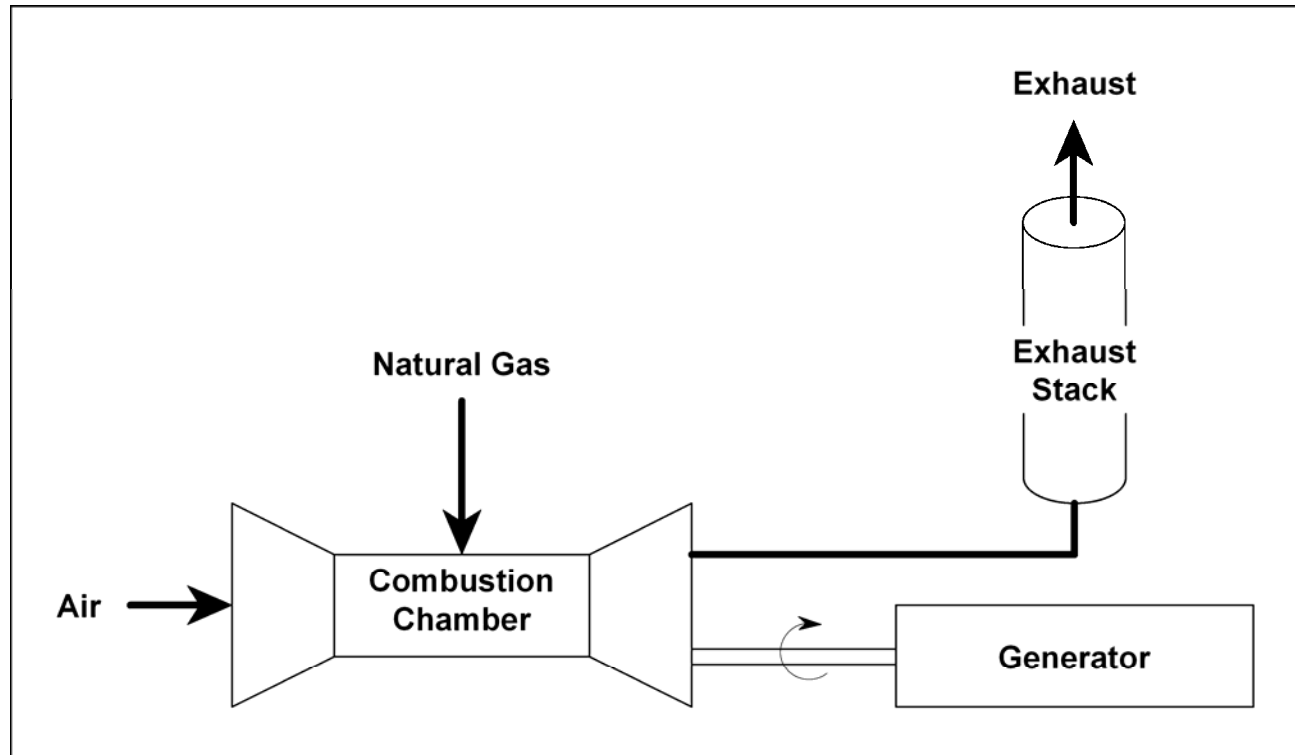




Figure 2-3 Preliminary simple-cycle facilities layout for the Sheboygan River Site



**Figure 2-4 Basic processes and equipment for the proposed PVG natural gas-fired simple-cycle power plant units**



## Specific description of the proposed plant major components

### Simple-cycle combustion turbines

At either of the proposed sites, PVG proposes to install three General Electric (GE) Model 7FA combustion turbines nominally rated at 177 MW each. Two of the units would be installed initially, with the third installed as market conditions allow. The combustion turbines would each be attached to and drive an electric generator. Each combustion turbine would be housed in an enclosure that would provide thermal insulation, acoustical attenuation, and fire containment.

The starting system is expected to bring the turbines up to synchronization with the electric system from zero load to full load in one-half hour or less.

In order to increase the efficiency of the simple-cycle combustion turbines, the units would be equipped with an evaporative cooler. Since combustion turbine power output decreases with increasing ambient temperature, the evaporative cooler increases efficiency by lowering the temperature of the air entering the unit. Water introduced in the evaporative cooler evaporates, and in doing so reduces the temperature of the incoming combustion air stream. Evaporative coolers are typically operated only when ambient temperatures are above 59°F and the unit is operating at full load.

### Efficiency and heat balance

The overall efficiency of simple-cycle combustion turbine units is typically between 34 and 38 percent. The average efficiency for older peaking units within the state (West Marinette, Germantown, and Rock River units) is 26 percent. By comparison, the existing base-load coal plants in Wisconsin typically have an overall efficiency of approximately 30 percent.

## **Expected hours of operation, expected outages, and expected plant life**

PVG expects that the proposed facility would operate as a peak load plant over its design life of 30 years. The plant is expected to operate up to 16 hours per day, usually between 6:00 a.m. and 10:00 p.m., during periods of high electrical demand. Normal operation of the plant would be expected to total approximately 1,795 hours per year.

Generally, planned power plant outages would relate to periodic inspections based on a combination of hours run and start cycles. An increase in the combination of run time and start cycles increases the inspection needs. Formulas supplied by the turbine manufacturer are usually used to calculate inspection intervals, and are based on the following:

Combustion turbine inspections are scheduled based on total hours of operation or number of starts since the last inspection. An outage of one week duration is typically necessary for such an inspection.

Hot gas path inspections are also scheduled based on total hours of operation or number of starts since the last inspection. An outage of two weeks duration is typically necessary for such an inspection.

Entire combustion turbine inspections are scheduled based on total hours of operation and number of starts since the last inspection. An outage of three weeks is typically necessary for such an inspection.

PVG would likely schedule the inspection outages for periods of lower electrical demand. The inspection intervals would vary depending on how much the plant is operated and unit design specifics. Any unforeseen but necessary repairs or replacement might add to the outage duration.

## **Reliability**

Wis. Stat. 196.491(3)(d) requires the Commission to consider reliability of the electric system in its determination of whether a project proposed for a CPCN is in the public interest. A new power plant would become part of the electric system. Power plant design and location affects electric system reliability.

### **Factors affecting power plant potential reliability**

- The choice of fuel and back-up fuel, if any. The use of natural gas as a primary fuel is discussed later in this chapter, and in Chapters 3 and 4. The PVG project would not include a back-up fuel.
- Restrictions on operation specified within the DNR air permit. The DNR air pollution control permit issues for this project are discussed for each site under “Air” in Chapters 3 and 4.
- Restrictions based on the DNR water use or discharge permits. The DNR water permit issues for this project are discussed for each site under “Water Resources” in Chapters 3 and 4.
- The potential impacts on the existing electric transmission system and the modifications to that system that might be needed. The related electric transmission system issues for this project are discussed in the section on the electric transmission connection in Chapter 2 and the sections on electric transmission construction impacts in Chapters 3 and 4.

## Equipment availability and maintenance

### Location and site alternatives

PVG proposes to build the plant on one of two alternative sites, designated here as the Highway 23 Site and the Sheboygan River Site. The following is a narrative describing the basic criteria and the process followed by PVG to locate the two proposed alternative power plant sites. A more detailed description of the two alternative sites can be found in Chapters 3 and 4 of this EIS.

### Search criteria

PVG used various maps and other geographic data to evaluate potential locations for the plant and in the process of doing so developed a list of candidate sites located throughout Wisconsin. Subsequent to the map analysis, an interconnection analysis was prepared to evaluate the relative performance of the electric transmission system to accommodate the new electric generation from the proposed plant. The Sheboygan County sites were selected based on a final evaluation of existing infrastructure, and environmental and development factors. Discussions with local officials and landowners concerning the proposed project were included in the site selection process. The two site alternatives, identified by PVG in 2002, were selected based on the following specific attributes:

- Access to ATC's 345 kV transmission system that would allow the proposed facility to be interconnected to the regional grid without requiring new right-of-way and would minimize environmental impacts from construction of new transmission lines.
- Access to two high-pressure natural gas pipelines owned and operated by ANR. Only minimal new permanent right-of-way would be required which would minimize environmental impacts.
- Sheboygan County is an attainment area for criteria air pollutants, which would simplify air permitting.
- There are no wetlands or floodplain impacts at either site.
- Field reconnaissance confirmed that no cultural resource or threatened and endangered species impacts would occur at either site.
- Access to a deep groundwater aquifer that could be used to supply water requirements without impact to the shallow aquifer utilized for domestic and farm uses in the area.
- Appropriate site topography.
- Lack of sensitive noise or visual receptors.
- Access to major equipment delivery routes including rail line, I-43 and Highway 23.

PVG states that the site alternatives presented in the application are suitable for the simple-cycle generating facilities proposed in its application. The proposed site alternatives are described in detail in Chapters 3 and 4 of this EIS.

## Construction activities and schedule

Construction for the proposed power plant may not be started until PVG receives the necessary DNR air emissions permits and Commission approval for the project, consideration of which is in late June or early July, 2004. If approved, construction would begin shortly thereafter. PVG expects two of the generating units to be placed in service between 12 and 14 months after it receives all necessary approvals. A schedule for installing the third generating unit is indefinite.



Construction of all major generating facilities would occur on site. In addition, the following construction activities would occur as noted:

- Construction of facilities to connect the plant to the existing ATC Point Beach-Granville 345 kV electric transmission line. The existing Point Beach-Granville transmission line is adjacent to both site alternatives, and construction would take place entirely on the selected plant site alternative or existing transmission line ROW.
- Construction of a new electric transmission switchyard, which would be located on site for either site alternative.
- Construction of miscellaneous minor equipment upgrades at existing electric substation sites in central and eastern Wisconsin.
- Construction of new natural gas supply pipeline facilities from the existing pipeline to the project site. Existing natural gas pipeline facilities are located near both site alternatives. For the Highway 23 Site, a section of new natural gas pipeline approximately 1,650 feet long would be constructed. For the Sheboygan River Site, the existing natural gas pipeline traverses the property, and construction of new natural gas facilities would take place entirely on the power plant site.

The approximately one-year on-site construction schedule would include the following activities:

- Mobilization on site
- Site clearing, grading and preparation of laydown area
- Construction of combustion turbine foundations
- Installation of combustion turbines
- Installation/construction of balance of plant equipment, fin fan coolers, buildings, and electric switchyard
- Paving of parking lot and access roads
- Final grading, landscaping, seeding and mulching

## **Auxiliary facilities - fuel**

### **Natural gas source and pipeline system connection**

PVG would obtain its natural gas from the competitive gas supply market. Natural gas is transported into the area on the interstate transmission pipeline system of ANR and is distributed in the area by Wisconsin Public Service Corporation, the local gas distribution utility. Existing parallel 10- and 12-inch natural gas pipelines owned by ANR are located approximately 1,600 feet from the Highway 23 Site. These pipelines traverse the Sheboygan River Site. PVG states that the existing ANR pipelines have sufficient capacity to supply the proposed project during the summer without additional upgrades. Power plant operations could be limited in the winter months due to lack of available winter capacity on the ANR pipelines.

ANR's transmission supply connections are located at the Joliet Hub in northern Illinois. At the Joliet Hub, interconnections can be made with other interstate natural gas pipelines to draw from gas supplies located in the U.S. Gulf Coast and Mid-Continent supply areas, as well as from western Canadian supply areas. There would be no natural gas storage at the power plant site.

The application describes a route of approximately 1,650 feet for extension of natural gas facilities to the Highway 23 Site. For the Sheboygan River Site, the existing natural gas pipeline passes through the site, so no new extension would be required. The location of the existing natural gas pipeline and the possible new pipeline to the Highway 23 Site are shown in Figure 2-2.

A natural gas metering and control station containing gas flow meters and pressure control equipment would be installed at the power plant site. At the Highway 23 Site, the new line would approach from the west, and the gas metering and control equipment would be located in the northwestern quarter of the site. At the Sheboygan River Site, this equipment would be located near the existing natural gas pipeline that traverses the site.

Overall, the proposed natural gas facilities would be designed, constructed, tested, operated, and maintained to meet the requirements of 49 CFR Part 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards;" 18 CFR Part 2.69, "Guidelines to be Followed by Natural Gas Pipeline Companies in the Planning, Clearing, and Maintenance of Rights-of-Way and the Construction of Aboveground Facilities;" and other applicable federal, state, and local standards.

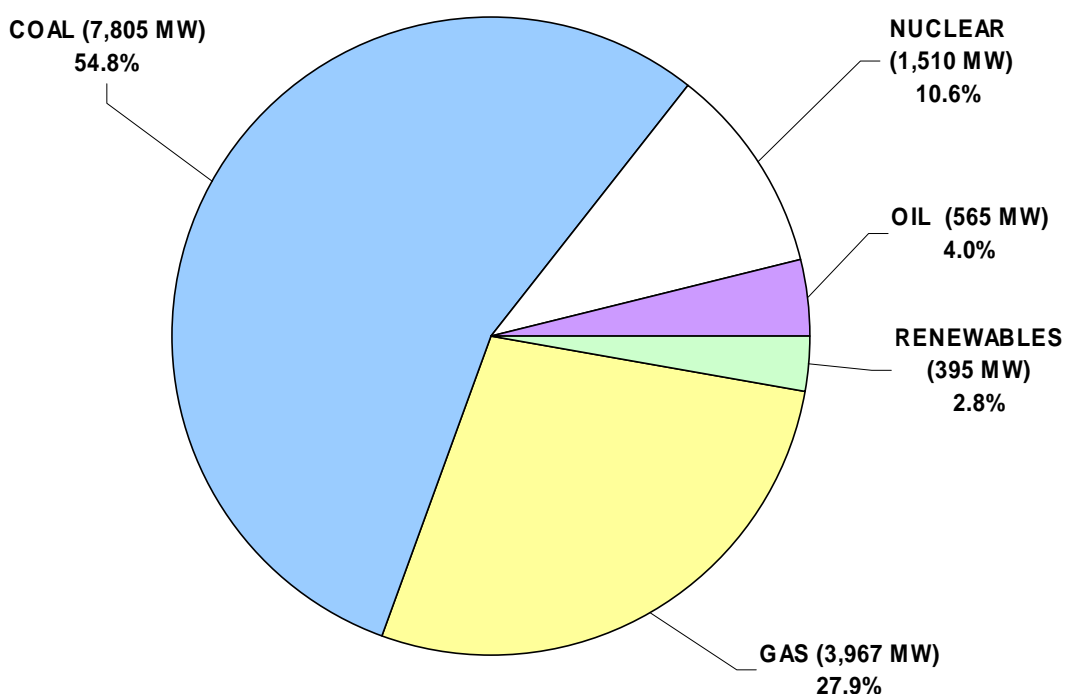
### **Implications of natural gas use**

As of July, 2003, natural gas represents 3,967 MW or 27.9 percent of the state's electric generating capacity. It is expected to represent an additional 2,567 MW, or 40 percent of the state's MW capacity, by the end of 2006 if all approved or proposed facilities are placed in operation including both Calpine Fond du Lac and Calpine Fox Energy. Figure 2-5 shows Wisconsin's current electric generation capacity by fuel type.

Using estimated capacity factors similar to those predicted for the proposed plants; Wisconsin will see a large increase in the use of natural gas for electric generation. The resulting natural gas consumption for electric generation could increase from 22,000,000 dekatherms (22 trillion BTU) to over 90,000,000 dekatherms (90 trillion BTU) if these new plants are built and run as anticipated.

Annual natural gas consumption in Wisconsin for industrial, residential, commercial and generation of electricity uses is presently 400,000,000 dekatherms (400 trillion BTU). Natural gas consumption by the proposed gas-fired plants could increase total state consumption by 22 percent by 2006.

The projected usage considers the output from the recently approved or currently approved CPCN applications for several combined-cycle units. This includes the first generating unit at Port Washington (but not the second), Calpine Fond du Lac, Calpine Fox Energy, Riverside, West Campus, and the Pulliam and Kaukauna combustion turbine (CT) projects. It does not include the previously approved Badger Gen and Mirant-Plover facilities.

**Figure 2-5 Wisconsin summer electric generation capacity by fuel type, as of July, 2003**

## Auxiliary facilities – water

### Water supply and storage

Water use at either site would include water for the combustion turbine evaporative cooler, periodic turbine washing, fire protection, and employee uses (drinking, washing, and sanitation). The facility would use raw water supplied from one of two wells at either site and stored in a 500,000 gallon raw water storage tank. PVG proposes to construct two wells at the plant site, so that a back-up source of water supply would be available in the event of a failure of the pump associated with one of the wells.

Based on preliminary groundwater quality studies, PVG proposes to utilize water for plant use without pretreatment. However, if it is later determined that the water quality is not sufficient for all uses without pretreatment, PVG would periodically contract to pretreat water for plant use. A trailer-mounted, portable ion exchange water softener would be used to pretreat the water. The treated water would be stored on site in the 500,000 gallon water storage tank, and blended with well water during plant operation to achieve adequate water quality while minimizing the amount of water that would require treatment. PVG states that there are several providers that are capable of providing the portable water treatment systems.

Similar to treatment systems used for home water treatment, the portable water treatment system would use an acid cation resin in sodium or potassium form to adsorb hardness ions from the untreated water. Periodic regeneration of the resin bed would be conducted by the owner of the water treatment

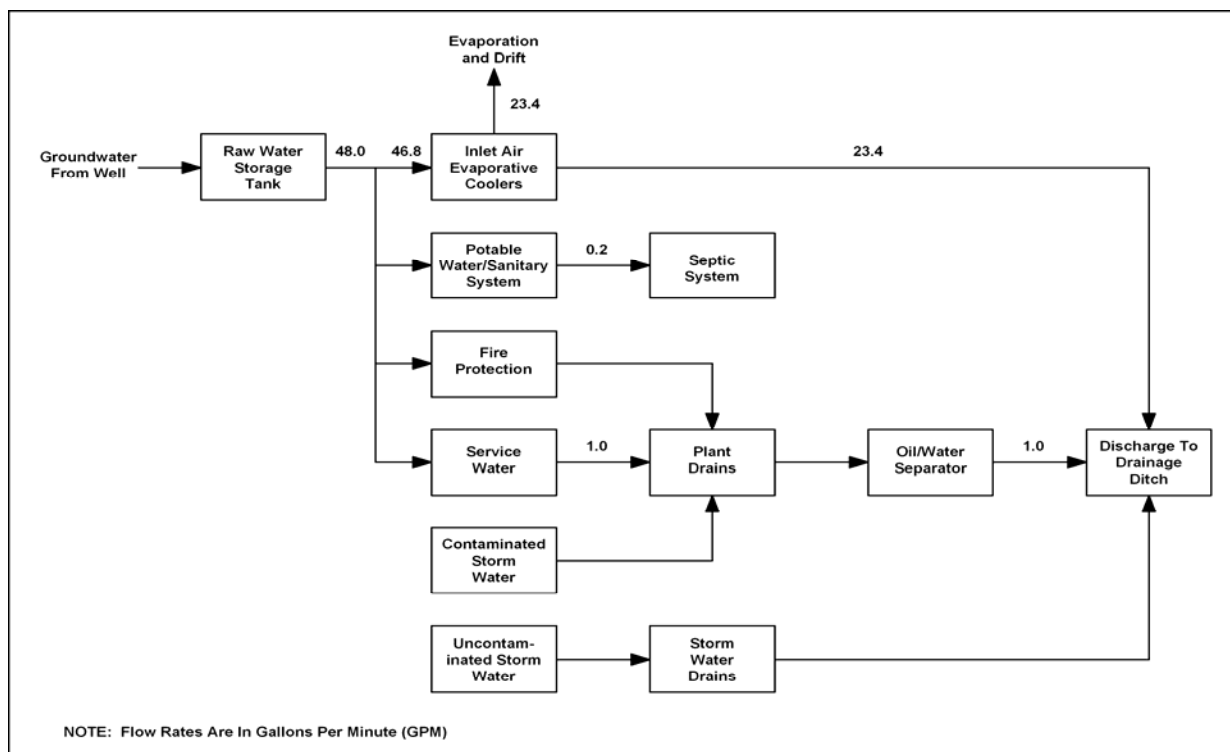
equipment, at the owner's facility. No discharge of regeneration brine or other materials from the water treatment process would occur at the plant site.

As mentioned previously, the evaporative coolers would increase the efficiency of the plant when it is operating at higher ambient temperatures. However, use of the evaporative coolers is not essential to operation and the plant could be operated without them, but at a lower overall efficiency. Water would be cycled through the evaporative cooler twice before its quality would degrade to the point that it was no longer useable.

A preliminary water balance diagram for the plant is included in Figure 2-6. The maximum water use rate for the plant is anticipated to be up to 104 gallons per minute at an ambient temperature of 92°F, with all three units operating at maximum capacity and using evaporative cooling. As mentioned previously, evaporative cooling would only be used when the ambient temperature is above 59°F, and the unit is operating at full load. Maximum water use for evaporative cooling is anticipated to be no more than 60,720 gallons per day. Total annual water use for the plant, including all uses, is anticipated to be approximately 7,567,200 gallons. Periodic off-line turbine washing would occur up to 12 times per year, using approximately 36,000 gallons per year.

Water withdrawn from the on-site wells would be limited to 60 gallons per minute or less by supplementing well water with water stored in the raw water storage tank.

**Figure 2-6 Water and wastewater balance diagram for the proposed simple-cycle generating plant during operation**



\*Note: Assumes all three units and evaporative cooling

## **Water discharge**

### **Wastewater**

Wastewater from the plant would consist of miscellaneous water collected in floor drains, off-line turbine wash water, and sanitary wastewater. In addition, the evaporative coolers would discharge an amount that would be necessary to limit impurity concentrations within the evaporative cooling system. Wastewater collected in floor drains and off-line turbine wash water would be routed through an oil/water separator prior to discharge. This wastewater, which would have essentially the same properties as that of the water supply, although it may be of higher concentration, would be discharged to a drainage ditch on the power plant site, and ultimately into the storm water retention pond. Sanitary wastewater would be discharged to an approved septic system that would be maintained in accordance with all state, county, and local requirements. The sanitary wastewater system would likely consist of a septic tank and leach field.

Up to 23.4 gallons per minute (GPM) of wastewater would be discharged from the evaporative cooler, with an additional 1.0 GPM discharged from sources other than the sanitary wastewater. Total daily plant process wastewater discharge is not expected to exceed 29,040 gallons per day. Total annual wastewater production from the plant is estimated at 3,657,600 gallons per year, at an average rate of 30,480 gallons per day.

A WPDES discharge permit will be needed for the wastewater produced by various plant processes.

### **Yard runoff**

A permanent storm water basin would be constructed to allow collected sediment to settle out prior to discharge and to ensure that current peak runoff rates are not increased. A series of drainage ditches, swales, and check dams would be used to control the flow of storm water into the storm water basin. Secondary containment for equipment and facilities that contain petroleum products would be provided to prevent the discharge of contaminated storm water. Any wastewater that could potentially be contaminated with oil would be processed in an oil/water separator prior to discharge. More discussion on yard runoff can be found in the water impacts sections of Chapters 3 and 4.

### **Solid waste generation and recycling**

Limited amounts of solid waste would be generated during plant operation, including office wastes and plant operation wastes, such as discarded containers and boxes. Normal maintenance would generate small quantities of solid waste. After plant startup, the estimated volume of solid waste disposal is expected to be approximately 2.0 to 2.5 cubic yards per week. Qualified contractors would be hired to dispose of solid waste as required by law. To encourage recycling, appropriate containers for recyclable waste would be placed in and around the construction offices, warehouses, maintenance shops, and lunchrooms.

### **Chemical use**

Small quantities of the following substances would be used at the power plant site: lubricants and oil; cleaning solvents, paint, and other similar compounds used for facility maintenance and repair; materials used in the day-to-day operations of a business; and assorted general consumer products. Some of these materials such as paint, solvents, lubricants/oil, and batteries, which are common to any industrial facility, are considered hazardous and would be stored and disposed of in compliance with applicable federal, state and local requirements, to prevent soil contamination. The storage and use of any hazardous substances on site would be properly reported to the Wisconsin State Emergency Response Commission (SERC) and the Local Emergency Response Committee (LERC) in accordance with the

provisions of the federal Emergency Planning and Community Right-to-Know Act (EPCRA) Tier II Reporting requirements. The Facility would maintain material safety data sheets (MSDS) for all chemicals on site. Appropriate procedures for storage and handling the materials would be maintained and enforced first by the construction contractor's safety inspector and later, during operation, by the plant manager's delegated and professionally certified safety coordinator.

During construction, diesel and gasoline fuel would likely be temporarily stored on site during construction activities in tanks within aboveground containment units consisting of dikes capable of containing at least 110 percent of the storage tank capacity or in truck-mounted tanks.

Additional discussion regarding the nature and handling of chemical substances at the plant site is included in Chapters 3 and 4.

## **Auxiliary facilities – electric transmission**

### **Existing electric transmission system**

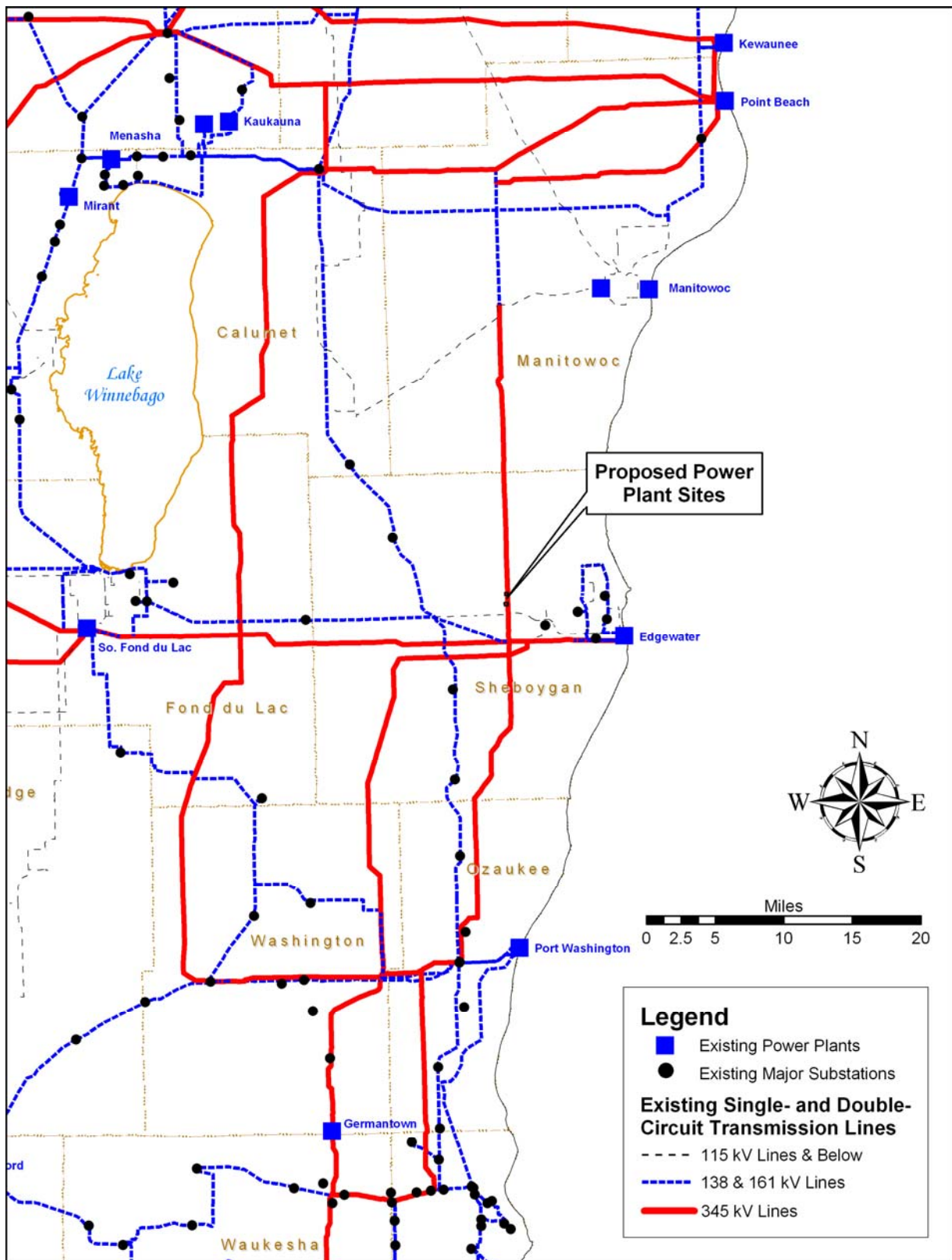
The American Transmission Company's (ATC) existing electric transmission network in relation to the proposed PVG power plant sites is shown in Figure 2-7. The transmission network includes 138 kV and 345 kV transmission lines. The two power plant sites abut the double-circuit 138/345 kV Point Beach-Granville transmission line.

### **Proposed electric transmission interconnection**

The proposed power plant must be connected to the ATC electric transmission grid to deliver electricity to consumers. ATC is required by law to interconnect a power plant located in its service territory to its transmission grid. The two proposed power plant sites lie adjacent to the double-circuit 138/345 kV Point Beach-Granville transmission line. ATC has proposed in its interconnection study to connect the PVG power plant by looping-in and looping-out the 345 kV circuit of the Point Beach-Granville transmission line. No other new transmission line construction would be needed for interconnection of the proposed power plant at either site. ATC estimates that looping of the 345 kV line to the power plant switchyard bus would require about five single-circuit structures. These structures would be located on the existing 138/345 kV transmission line ROW and the power plant site.

ATC proposes to configure the switchyard with a three-position ring bus, expandable to a total of six positions. Only three positions would be required to interconnect the PVG power plant. ATC expects that additional positions are likely to be required for a 345/138 kV transformer or a future 345 kV line if necessary. The relays and the circuit breakers at the PVG switchyard or substation are to be capable of clearing a breaker failure event in nine cycles or less. Therefore, all breakers required will be two-cycle, independent pole operated (IPO) type breakers, with a minimum interrupting rating of 50 kA. Relaying equipment will be selected to achieve the desirable clearing times for this generator. Figure 2-2 shows the power plant and switchyard layout. PVG would install, own, and maintain all equipment on the power plant side of the Point of Interconnection (POI), such as the generation step-up transformers (GSU), GSU breakers, Power System Stabilizers (PSS), protective relays, high voltage disconnect switch, and bus work between the POI and GSU breaker. ATC would, however, operate the PVG owned bus work and high voltage disconnect switch. ATC would install, own, and operate the ring bus, circuit breakers, disconnect switches, control and relaying devices, control house, and connections to the 345 kV circuit of the Point Beach-Granville line.

Figure 2-7 Existing transmission system in southeastern Wisconsin



## **Expected impacts on the transmission system**

### **Generator interconnection study**

Any power plant developer seeking to interconnect new generation to the ATC transmission system must first reach an agreement on interconnection with ATC. ATC processes the interconnection requests in the order they are received, and as part of the process for reaching an interconnection agreement, ATC carries out an interconnection study to identify impacts that interconnection of a new power plant would have on the existing system. The interconnection study identifies both transmission facility upgrades that are required for a power plant interconnection, and those that are not required for interconnection but would be needed to deliver power from the power plant to consumers.

The Commission generally prefers that any required transmission system upgrades be considered together with the power plant application. In some cases, however, it may not be practical to consider all required transmission upgrades on the same schedule as the power plant application. In this case, ATC would need to apply for authority to build the interconnection facilities should the Commission approve this project.

New generation can have a variety of effects on the existing power system. It can alleviate existing problems on the transmission network, or it can create new problems. The interconnection study that ATC performs considers several potential impacts on the existing power system. When new generation is added in an area, it will change the way that power flows on the transmission lines in the area. Generally, it will increase the level of current on lines carrying power away from the power plant site. The new generation may have the potential to cause some lines to overload under certain combinations of electricity demand and generation in the area. Overloads can cause overheating of conductors (current-carrying wires) or other transmission equipment, which have operating thermal (heating) limits. System operators who monitor and control the transmission grid would prevent these overloads by restricting generator power output. The ATC interconnection study includes a thermal analysis to investigate these effects.

Overloads could also be mitigated in variety of other ways. A potential transmission line overload may be removed by replacing the conductors or the overloaded equipment with higher capacity conductors or equipment. It may also be possible to relieve overloads by increasing the ground clearances of conductors so that they do not violate required ground clearances. In some cases no upgrades to existing lines may be practical, and construction of a new line to carry power, or a new substation to redistribute power, may be the best solution.

In addition to thermal overloads, new generation can adversely affect the operation of the existing power system. The interconnected power system is generally able to remain stable even when subjected to periodic disturbances, such as generator or transmission line outages. It does this by relying on the ability of rotating generators to exchange energy through the transmission network. New generation can add stress to the existing transmission system, which can make it difficult to exchange enough energy to preserve stable, synchronized operation of the power system. The ATC interconnection study includes a dynamic stability analysis, which considers this effect. Potential dynamic stability problems identified in the study may be addressed through a variety of means, including installing faster operating circuit breakers, imposing operating restrictions on the new power plant, adding new transmission lines, or



equipping the new power plant with power system stabilizers, or constructing switching stations or substations<sup>1</sup>. Upgrades identified in the dynamic stability analysis may be required for interconnection.

The interconnection study also includes a ‘fault duty’ analysis to assess increases in fault (short-circuit) current caused by the new power plant. In some cases, the new power plant may increase short-circuit currents to levels above the rated interrupting capabilities of circuit breakers in the area. ATC would need to replace these circuit breakers with appropriately rated equipment before the power plant could operate.

### **Interconnection study results**

PVG’s proposed power plant would include three combustion turbine generators with a total capacity of 530 MW. As stated above, ATC processes the interconnection requests in the order they are received. ATC determined that five pending generation interconnection requests—requests for connecting power sources to the ATC transmission system that are ahead of the PVG power plant—would affect the PVG power plant interconnection study results. (Public information on the interconnection requests and their positions in the interconnection request queue is available at the Midwest Independent System Operator (MISO) web site <http://www.midwestiso.org/> and ATC’s web site at <http://www.atcllc.com/>.)

Because there is little difference between the proposed interconnection approaches at either site, a single interconnection study was performed that is valid for both sites. The study was performed with the PVG power plant connected to the existing 345 kV circuit of the double-circuit 138/345 kV Point Beach-Granville Line. Each of the three power plant’s 220 MVA generators was assumed to be connected through a 345-18 kV, 240 MVA GSU to the ATC grid through a three-position ring bus.

ATC completed its generation interconnection study for the PVG power plant in February 2003, evaluating the ATC expected transmission system before and after the interconnection of the PVG power plant with and without including in the ATC transmission system the other five projects that are ahead of the PVG power plant in the ATC’s interconnection request queue. The interconnection study identified (potential) transmission problems and their solutions relating to the interconnection of the PVG plant to the ATC grid. A Facility Study was conducted in June 2003, and updated in July 2003 and February 2004. The purpose of the study was to select the most appropriate solutions and costs for resolving the transmission issues identified in the interconnection study. The updated Facility Study is based on the commercial operation of the PVG plant starting in June 2005.

The February 2004 update of the Facility Study was necessitated because of operational changes in the Point Beach and Kewaunee nuclear power plants and the Fox Energy power plant in Kaukauna, and the elimination from the interconnection queue of two other proposed merchant power plants. The study results indicated that interconnection of the PVG power plant would not require any transmission system modifications if the three generation sources ahead of the PVG power plant in the ATC queue were interconnected to the ATC grid before the proposed in-service date of the PVG plant.

### **Transmission system upgrades**

Delivery of power from a power generation source to consumers may cause thermal overloading of transmission lines and equipment, requiring their upgrades. Upgrades due to the thermal overloading

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<sup>1</sup> A switching station connects multiple lines of the same nominal voltage, whereas a substation includes one or more transformers, allowing electrical connections between lines of different voltages.

are not required to interconnect a power plant to the transmission grid, but may be necessary depending on the destination of the power that is generated at the power plant.

ATC performed a power flow (thermal) analysis using its projected 2004 summer peak load and assuming delivery of electricity from the PVG plant to WE Energies service territory.<sup>2</sup> The analysis was done with and without generation from the other proposed power generation sources pending in the ATC queue.

With only the PVG plant producing power at its summer output of 480 MW, five transmission facilities would need upgrading due to overloading. These include Edgewater-Cedarsauk 345 kV line, Arcadian-Waukesha 138 kV line, the proposed Granville-PVG plant 345 kV line, and two transformers at Arcadian Substation. Excepting the Granville-PVG Plant 345 kV line, the other overloaded facilities are included in the ATC 10-year transmission plan for upgrading. The costs for these improvements have not yet been estimated. The Granville-PVG Plant 345 kV line would be upgraded by raising the height of its structures at an estimated cost of \$250,000.

With the other proposed generation sources<sup>3</sup> in the ATC queue interconnected to the transmission grid along with the PVG plant, and assuming the PVG plant generation is delivered to the WE Energies service territory, ATC's thermal analysis indicated that upgrading of several existing facilities and construction of new facilities would be required to mitigate the overloading of transmission facilities. The upgrades of the existing facilities may cost upward of \$15 million. The construction of new facilities may include a 345 kV switching station at an estimated cost of \$19 million.

The specific transmission facilities requiring construction or upgrading will be determined once specific transmission service requests are made. Separate construction approval may be required for those facilities depending on their scope and estimated cost.

## Costs

The Federal Energy Regulatory Commission (FERC) has jurisdiction over the allocation of interconnection and other upgrade costs. However, ATC has established policies for assigning cost responsibility for system improvements associated with new generation. In general, the cost of required interconnection facilities identified in the ATC interconnection study would be covered by ATC. This might take the form of initial project financing by the generation developer, followed by ATC reimbursement or credit against future ATC transmission service charges. ATC's willingness to pay for these costs is contingent upon a determination by ATC that these costs are reasonable. PVG has agreed to initially finance the construction of the interconnection facilities by ATC.

Cost responsibility for upgrades other than those identified as required in the interconnection study would initially fall on the generation owner rather than the ATC. However, the generator owner might be able to obtain partial or full reimbursement of these costs in the future as credit against future ATC transmission service charges. ATC indicates that the precise treatment of these costs would be dependent on the amount and type of transmission service that the generator requests from ATC.

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<sup>2</sup> PVG requested that ATC conduct the thermal analysis with the assumption that the PVG plant generation is delivered to WE Energies service territory. This assumption may not reflect the actual power delivery once the PVG plant starts commercial operation, particularly considering the proposed acquisition of the plant by Alliant Energy Generation.

<sup>3</sup> Power from these generation sources is assumed to flow 75% to south (Illinois) and 25% to west (Northern States Power Company/s territory).

Costs assumed by ATC would ultimately be borne by retail customers who rely on the ATC transmission system. Accordingly, the cost of interconnection facilities is a legitimate public policy concern, and it is appropriate for the Commission to ensure that any interconnection costs associated with a given power plant proposal are reasonable. ATC estimates that construction cost of the ATC owned part of the switchyard and interconnection would be \$6.2 million.

### **Agreements required**

PVG and ATC must sign an interconnection agreement before the power plant can be interconnected to the ATC grid. The interconnection agreement specifies the engineering design of the interconnection and the responsibilities of the parties related to coordination, information sharing, financial matters and other items. In addition, either PVG or the party to which it is selling power would have to obtain transmission system reservations for delivering power from the PVG power plant to the customers.

PVG and ATC entered into the interconnection agreement on October 15, 2003. The interconnection agreement was filed with the FERC for its approval on November 14, 2003. FERC approval is still pending.

### **Commission energy priority requirements**

Wis. Stat. §§ 1.12 and 196.025 require the Commission to give priority to specific methods of meeting energy demands, to the extent these methods are “cost-effective and technically feasible.” The Commission must consider options based on the following priorities, in the order listed, for all energy-related decisions:

- Energy conservation and efficiency
- Noncombustible renewable energy resources
- Combustible renewable energy resources
- Nonrenewable combustible energy resources, again in the order listed
- Natural gas
- Oil or coal with a sulfur content of less than one percent
- All other carbon-based fuels

If the Commission identifies an option to the proposed power plant during its review that is cost-effective and technically feasible, it could reject the Sheboygan Energy Facility project as proposed. It could not, however, order PVG to build something else in its place.

### **Energy conservation and efficiency**

#### **Demand-side management**

Energy efficiency in an area can often be gained without new electric energy production. Energy conservation is one method of “demand-side management” (DSM) as opposed to “supply-side management.” DSM techniques include energy conservation, fuel switching, and load management. Each is defined briefly below.

Energy conservation reduces the use of electric energy. Examples of energy conservation include: installing more efficient appliances, improving building insulation, redesigning industrial processes to use less energy, and reducing lighting loads through use of daylighting.

Fuel switching replaces the use of electricity with the use of another energy source. Natural gas has frequently been selected as the fuel of choice in the past. However, in the more recent past, with the price of natural gas elevated, other fuels may be considered more often. Examples of fuel switching have recently included replacing electric appliances such as water heaters and clothes dryers with natural gas appliances and using propane for heating fuel instead of electric heat.

Load management reduces the peak demand for electricity during a specific period. Examples of load management include programs that control air conditioning loads during times of extreme demands for electric power and programs that provide monetary incentives for large users of electricity to shed loads during peak periods.

### **DSM as an alternative to building a power plant**

New power plants are built to generate more electricity, and to provide additional generation capacity when demand for electricity is at its greatest. DSM can often reduce or delay the need to build power plants by lowering the use of, or demand for, electricity. Decreasing demand can have the same effect as increasing supply.

### **Advantages of DSM over power plants**

Using DSM to meet system electric needs can have many advantages over using supply resources such as power plants and power lines. These advantages can be both economic and environmental.

The most significant economic advantage is that, if cost-effective, DSM will reduce customer's electric bills. This can help make Wisconsin businesses more competitive. By reducing the amount of dollars spent on energy in Wisconsin, DSM can also improve the state's economy in general. This is because most of every dollar spent on coal, natural gas, or uranium leaves Wisconsin and our economy.

From an environmental perspective, DSM is the best option for meeting energy needs. Conservation and some forms of fuel switching reduce air pollution, water use, coal and uranium mining, disposal of radioactive waste, production of greenhouse gases, and the depletion of non-renewable resources. Conservation, fuel switching and load management, by reducing the need for power plants and power lines, also reduce the negative impacts of those facilities such as the use of valuable land, destruction of natural habitats, and aesthetic impacts. Almost all of the environmental impacts of the proposed power plant, noted elsewhere in this EIS, could be avoided if DSM could substitute for the power plant.

There are some potential negative impacts associated with DSM measures. Switching fuels would still have impacts due to the use of the alternate fuel. Load management, if not designed properly, can lead to discomfort or the inefficient disruption of industrial production. High-efficiency fluorescent light bulbs have disposal problems. Overall, though, the negative effects of DSM measures are negligible compared to the building and operation of power plants.

### **The Commission's legal requirements regarding DSM as an alternative to the proposed plant**

DSM, if available, could be an alternative to a power plant. However, Wis. Stat. § 196.491(3)(d) states that the Commission cannot consider alternative sources of supply when deciding whether or not a proposed merchant power plant is "in the public interest."

PVG is not required by law to provide any data on how much of the proposed capacity or energy produced by the plant would be used to meet Wisconsin energy needs, nor is it required to provide data

on the cost of generating electricity at the proposed power plant. With no costs to compare to the cost of equivalent DSM, and no data on when or to whom the plant would supply energy, the Commission cannot determine DSM's cost-effectiveness as an alternative as required under Wis. Stat. §§ 1.12 and 196.025, or even how much DSM would be equivalent to the proposed plant.

As mentioned previously, the project may not be operated as a merchant plant. PVG is presently negotiating to sell the proposed project to AEG. AEG would own the power plant but would then lease the project to WP&L, who would operate the power plant. WP&L is affiliated with AEG and is a Wisconsin utility. If this arrangement is finalized, the Commission, for the purpose of protecting ratepayer interests, would open a proceeding to review and approve, reject, or modify the arrangements between AEG and WP&L.

## **Renewable resources**

The proposed power plant will use natural gas as the fuel to generate electricity. Renewable resources that can be used as an alternative to natural gas in Wisconsin include solar power, wind power, hydroelectric power, and biomass fuels.

### **Renewable resources as an alternative to a power plant fueled by natural gas**

From an economic perspective, money paid for local renewable resources to produce electricity for the state could remain in the state, instead of being paid to out-of-state entities for natural gas or other fossil fuels. This would be especially true for biomass-fueled generation if fuel crops were grown on Wisconsin farmland.

There are generally fewer or less environmental impacts with generation from renewable resources than with generation from fossil fuels. Most of the environmental advantages of renewable resources are related to air emissions. None of the renewable resources noted above produce significant air emissions, if any, except for the burning of biomass fuel. However, if new biomass crops were continually re-grown to supply fuel, the net contribution to global greenhouse gases would be negligible since the new crops would absorb carbon dioxide. Of the various renewable resource technologies, only biomass power would have water use impacts similar to a fossil-fueled power plant. Each of the renewable resources would have their own impacts on land use. Some renewable technologies also have particular kinds of negative impacts. For instance, wind power in certain locations has been criticized for aesthetic reasons or for its potential to cause bird injuries and deaths due to collisions with the towers and turbines.

### **Commission's legal requirements regarding renewable resources as an alternative to a natural gas fueled power plant**

Like DSM, renewable resources, as an alternative to the power plant, has a higher priority under Wis. Stat. § 1.12 than natural gas combustion. However, under Wis. Stat. § 196.491(3)(d), the Commission cannot consider it as an alternative to the proposed technology for the proposed project because it is a merchant plant.

## **Natural gas and other nonrenewable combustible energy sources**

Natural gas is the fuel of PVG's choice for the plant. There is no alternate fuel capability proposed for this plant. Coal and other carbon-based fuels have not been proposed.

## No build alternative

Taking no action on this application, by denying the application, would result in no change in the number of power plants in the state. Electricity providers would have the same sources of electricity available as they have currently.

Taking no action on this application, by not making a final Commission decision, would result in automatically granting a CPCN to the applicants under Wis. Stat. § 196.491 (3)(g). The applicant would then have the option of constructing the plant at either of the two proposed sites.

## Horizontal Market Power

Wisconsin Stat. § 196.491(3)(d)7 requires the Commission, before issuing a CPCN, to find that the proposed wholesale merchant power plant facility “will not have a material adverse impact on competition in the relevant wholesale electric service market.” For reasons stated below, it is unlikely that the proposed project would result in horizontal market power concerns.

Presently, due to transmission system constraints and congestion, the relevant wholesale electric service market, from an anti-trust perspective, is the geographic region of the Wisconsin Upper Michigan System (WUMS). This fact was documented for the Commission in an independent market power study conducted by Tabors, Caramanis and Associates of Cambridge, Massachusetts<sup>4</sup>. The WUMS wholesale electricity market is highly concentrated.<sup>5</sup> When a market becomes so limited, utilities or other players with a large market share or concentration can obtain leverage over the prices being paid in that market. In essence, a large electric generating firm in a narrow competitive energy market can influence prices to its advantage and everyone else’s detriment. In economics, such leverage is referred to as horizontal market power and is policed by federal and state anti-trust law.

However, this is not the case here because PVG, owner of the proposed project, is a new entrant to the WUMS market, not an incumbent firm planning a merger or additional capacity. In economic theory, new entrants can discipline the potential for the exercise of horizontal market power. Under the federal anti-trust guidelines, the ease of entry is a specific mechanism that can make even a highly concentrated market conform to the normal price behavior found in typical competitive markets<sup>6</sup>. In summary, even though WUMS is a highly concentrated wholesale electric service market, the fact that PVG is a new entrant means that the proposed project is unlikely to adversely impact competition in WUMS. If, in fact the plant is built, the facility would improve the competitive market.

The conclusion that the proposed project would not result in horizontal market power concerns is expected to remain the same despite AEG recently announcing its intention to purchase the PVG unit and then lease the plant to WP&L. This is because:

1. FERC allows Alliant Energy companies to sell electric power and energy at market-based prices because it does not have market power. If it did have market power, FERC would only allow the selling at cost plus a small margin.

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<sup>4</sup> See, Horizontal Market Power in Wisconsin Electricity Markets, A Report to the Public Service Commission of Wisconsin, November 14, 2000.

<sup>5</sup> Ibid.

<sup>6</sup> See Section 3.0, Entry Analysis, 1992 Horizontal Merger Guidelines, U.S. Department of Justice and Federal Trade Commission, as revised April 8, 1997.

2. The electric power and energy are expected to be sold to WP&L under a leasing arrangement that will receive price scrutiny by the Commission. Such economic regulation prevents the exercise of market power.





# CHAPTER 3

## Chapter 3 – Environmental Review of Highway 23 Site

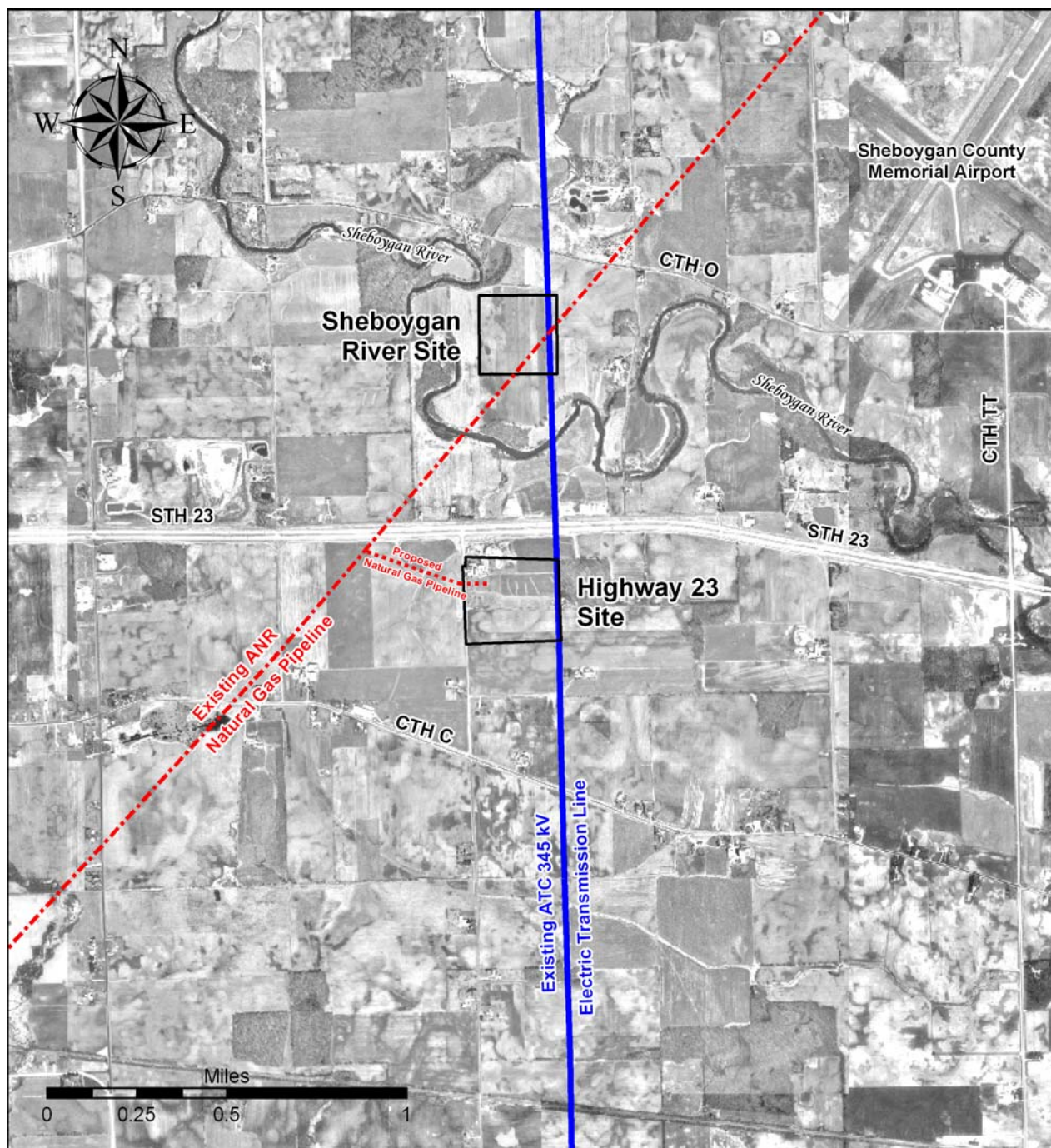
### LOCATION AND SITE DESCRIPTION

The Highway 23 Site is located on the south side of Highway 23 and east side of Bridgewood Road in the town of Sheboygan Falls, in Sheboygan County. The site lies in the NW  $\frac{1}{4}$  of the SW  $\frac{1}{4}$  of Section 21, Township 15N, Range 22E. The Highway 23 Site is approximately 40 acres in size (see Figure 3-1).

The Highway 23 Site has about 30 acres in agriculture. On the northwest side of the property there is about 10 acres developed for a tree nursery and landscaping business. The proposed power plant and substation facilities would convert about 11 acres to industrial land use. The proposed project would leave approximately 29 acres of open space. This property is currently zoned as B1 Industrial/Commercial.

PVG has purchased an option to buy the Highway 23 Site.

Figure 3-1 Project site locations



## NATURAL RESOURCES

### Air quality

#### Source description

The sources of air pollutant emissions from the proposed power plant are described in the construction permit application, which was submitted to the DNR on January 17, 2003. Emissions from the proposed project would be generated from the following individual sources:

- Three 177 MW simple-cycle combustion turbines firing natural gas
- Two 9 mmBtu/hr gas heaters
- One 350 hp diesel-fired fire pump

However, the primary source of air emissions from this project would be the combustion turbines. Air pollutant emissions of concern for this project would be the criteria pollutants listed below. PVG would fuel the turbines only with natural gas and does not propose to use a back-up fuel, such as fuel oil, at the plant site.

#### National Ambient Air Quality Standards (NAAQS)

The Federal Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to establish NAAQS for air pollutants that could adversely impact human health or welfare. NAAQS have been established for the following pollutants, collectively referred to as “criteria pollutants.”

- Sulfur dioxide (SO<sub>2</sub>)
- Nitrogen oxides (NO<sub>x</sub>)
- Carbon monoxide (CO)
- Particulate matter less than 10 microns in diameter (PM<sub>10</sub>)
- Ozone—including volatile organic compounds (VOCs)
- Lead

The NAAQS are established by the EPA to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly, and to protect public welfare, including protection against decreased visibility, injury to animals, crops, vegetation and buildings. Allowable levels of air emissions called Prevention of Significant Deterioration (PSD) increments are established to prevent significant deterioration of air quality in areas with clean air, and to maintain those areas in compliance with the NAAQS. PSD monitoring thresholds are established to determine whether local ambient air quality monitoring is required in order to accomplish the objective of maintaining an area in compliance with NAAQS or PSD increments.

The EPA has delegated its Clean Air Act permitting and review authority to the DNR. The state of Wisconsin regulates air pollutant emissions under Wis. Admin. Code ch. NR 400-499 and has adopted the EPA primary and secondary standards. EPA describes an area as “nonattainment” if the ambient air quality standard for one or more of the criteria pollutants listed above is not met.

In areas such as Sheboygan County, where concentrations of the criteria air pollutants currently comply with federal air quality standards, new or modified sources of air emissions are subject to PSD permitting requirements if potential emission rates exceed major source thresholds.

The U.S. EPA has proposed to designate Sheboygan County as a moderate non-attainment area for the 8-hour ozone standard. This would affect new or modified facilities in Sheboygan County classified as major sources of ozone precursors that receive air permits after the effective date of this designation. For a moderate ozone nonattainment area, this applies to emission sources of 100 t/yr. or greater of VOCs or NO<sub>x</sub>, which would include this facility. If the air permit for this facility is issued after the effective date of the nonattainment designation for Sheboygan County, the facility would need to meet Lowest Achievable Emission Rate (LAER) emission limits and obtain offsets for NO<sub>x</sub> and VOC; or be subject to air permit conditions which would make the facility a minor source of VOCs and NO<sub>x</sub> (see Air Quality in Chapter 3). At present, the effective date for the designation change is expected to be June 15, 2004.

### Estimated potential emissions during operation

Nitrogen oxide (NO<sub>x</sub>) emissions expected from the proposed facility would be 205 tons per year from all emission sources at the facility. The GE 7FA gas turbines would be supplied with low-NO<sub>x</sub> burners that would control the emissions to 9 parts per million (ppm) while operating at 60 percent load and above year-round. The gas heaters will emit NO<sub>x</sub> at a rate of 0.86 lb/hr while the fire pump, when combusting fuel oil, will emit 8.10 lb/hr of NO<sub>x</sub>.

Sulfur dioxide (SO<sub>2</sub>) emissions from the proposed facility would be less than other fossil fuel plants because only natural gas would be used as a fuel. Natural gas has a low sulfur content when compared to other fossil fuels. Emissions from the turbines would be limited to 5.5 lb/hr of SO<sub>2</sub>. Emissions from the gas heaters would be limited to 0.008 lb/hr of SO<sub>2</sub> while operating on natural gas. The diesel fire pump would only combust 0.05 percent sulfur diesel fuel, which will reduce emissions of SO<sub>2</sub> from the fire pump to 0.13 lb/hr.

Emissions of mercury (Hg) from all units at the proposed facility would be negligible. Hg emissions from the combustion of natural gas are not detectable.

The maximum hourly emissions from the CTs encompass the full range of operating loads and temperatures. Emission rates were obtained from the performance data provided by GE. The proposed maximum hourly emissions from one CT unit are shown in Table 3-1. VOC emissions are estimated for the CT at less than 10 percent of unburned hydrocarbon emissions at 60 percent load and above. Particulate matter is assumed to be equivalent for all particulates, and refers to particulate matter as PM/PM<sub>10</sub> for all emissions and impacts.

**Table 3-1 Highway 23 Site - Proposed Maximum Hourly Emissions for One Unit**

Source Pollutant	Each CT Emissions (lbs/hr)	Gas Heater Emissions (lbs/hr)	Diesel Fire Pump Emissions (lbs/hr)	Each CT Maximum Hourly Emissions Basis
NO <sub>x</sub>	63	0.86	8.10	0°F 100% Load
CO	32	0.72	2.08	0°F 100% Load
SO <sub>2</sub>	5.5	0.008	0.13	0°F 100% Load
PM/PM <sub>10</sub>	18	0.065	0.12	0°F 100% Load
VOC	15	0.047	0.05	0°F 100% Load
Lead	neg.	neg.	neg.	
Sulfuric Acid Mist	neg.	neg.	neg.	
Beryllium	neg.	neg.	neg.	

Note: neg. = negligible

The gas heater would emit small quantities of air pollutants. Emission rates shown below as negligible are either not measurable in the exhaust or have emission factors or engineering estimates that are imprecisely identified because of the extremely small levels found in the exhaust.

Table 3-2 summarizes the potential annual emissions to the air expected from the proposed power plant in tons-per-year (TPY). For the CT units, the estimates assume a natural gas sulfur content of 0.2 grains/100 standard cubic feet of natural gas. It is assumed the VOC estimates for those units would be less than 10 percent of unburned hydrocarbon emissions at 60 percent load and above.

Total annual emissions, estimated in Table 3-2, are based on three CT units operating at 100 percent load at the average annual ambient temperature of 0°F for 1,795 hours per year and include startup and shutdown emissions. Total emissions also assume that operation of the diesel fire pump is limited to 52 hours per year.

**Table 3-2 Highway 23 Site - Estimated Annual Emissions for Project**

Pollutant	Three Combustion Turbines Annual Emissions <sup>(1)</sup> (tpy)	Two Gas Heaters Annual Emissions (tpy)	Diesel Fire Pump Annual Emissions (tpy)	Total Facility Annual Emissions <sup>(1)</sup> (tpy)
NO <sub>x</sub>	197.7	7.5	0.21	205.4
CO	242.7	6.3	0.05	249.0
SO <sub>2</sub>	16.2	0.1	0.003	16.3
PM/PM <sub>10</sub>	51.3	0.6	0.003	51.9
VOC	42.8	0.4	0.001	43.2
Lead	neg.	neg.	neg.	neg.
Sulfuric Acid Mist	neg.	neg.	neg.	neg.
Beryllium	neg.	neg.	neg.	neg.

Note: (1) = includes startup/shutdown emissions, tpy = tons per year and neg. = negligible.

## Background Concentrations for SO<sub>2</sub> and CO

Local background concentrations of various pollutants are shown in Table 3-3 where there is an applicable averaging period.

**Table 3-3 Highway 23 Site - Background concentration of SO<sub>2</sub> and CO**

Time Period	SO <sub>2</sub> (µg/m <sup>3</sup> )	CO(µg/m <sup>3</sup> )
1 hour		3,188
3 hours	137.1	
8 hours		890.4
24 hours	35.2	
Annual	7.9	

Note: µg/m<sup>3</sup> equals micrograms per cubic meter

## Expected project air pollutant impacts

An air quality modeling analysis was completed by the DNR (see Table 3-4). The analysis assessed the impact of particulate matter, nitrogen oxide, sulfur dioxide and carbon monoxide. The PSD baseline for Sheboygan County has not been set. The results of the air quality modeling analysis demonstrate that the applicable ambient air quality standards for Total Suspended Particulates (TSP), PM<sub>10</sub>, NO<sub>x</sub>, SO<sub>2</sub> and CO will be attained and maintained.

## New Source Review (NSR) regulations

The proposed power plant is not listed in the 28 source categories found in 40 CFR 52.21. The facility would be considered a major stationary source only if the potential emissions of a PSD criteria pollutant exceeds 250 TPY. PVG is applying to limit the emissions from the proposed facility to less than 250 TPY which is below the major source threshold levels for potential emissions. With this limitation, this project qualifies as a synthetic minor source and will not require a PSD permit.

**Table 3-4 Air quality analysis results for the Power Ventures Group facility**

Pollutant	Averaging Interval	Source Impact ( $\mu\text{g} / \text{m}^3$ )	Total Concentration $\mu\text{g} / \text{m}^3$	% of NAAQS
Nitrogen Oxides ( $\text{NO}_x$ )	Annual	33.6	47.2	47.2%
Carbon Monoxide (CO)	1-hour	545.2	3733.2	9.3%
	8-hour	141.2	1031.6	10.3%
Particulate Matter < 10 $\mu\text{m}$ ( $\text{PM}_{10}$ )	24-hour	4.3	62.3	41.5%
	Annual	0.52	27.5	55%
Particulate Matter (PM)	24-hour	4.3	80.3	53.5%
Sulfur Dioxide ( $\text{SO}_2$ )	3-hour	16.0	153.1	11.8%
	24-hour	4.6	39.8	10.9%
	Annual	0.53	8.4	10.5%

## Acid Rain Program

The proposed power plant would also be subject to Title IV (Acid Rain Program) requirements of the Clean Air Act Amendments. As a result, the proposed plant would be required to obtain  $\text{SO}_2$  emission allowances, if it emitted significant amounts of that pollutant. Requirements under Title IV will be determined when the operational air quality permit is issued.

## Hazardous air pollutant emissions

In addition to the Federal Hazardous Air Pollutant (HAP) requirements mandated by 40 CFR Part 63 maximum achievable control technology (MACT) standards, Wisconsin has a program to regulate the emission of air toxics. The state requirements for HAPs are found in Wis. Admin. Code Ch. NR 445. However, because this facility would combust only natural gas, emissions from this facility are exempt from regulation under NR 445.

A facility is a major source of federally regulated HAPs if one or more federally regulated HAPs are emitted at greater than 10 tons per year or if some or any combination of federally regulated HAPs is emitted at greater than 25 tons per year. Since total potential HAP emissions are estimated at less than 6 tons per year, the facility will not be a major source of HAPs and is not subject to the MACT requirements of 40 CFR Part 63 (see Table 3-5).

**Table 3-5 Results of HAP analysis for the proposed facility assuming three combustion turbines are in operation**

Pollutant	Emission Factor	Maximum Theoretical Emissions (lb/hr)	Potential to Emit Tons/year
1,3 Butadiene	0.000000043	0.00222	1.99E-03
Acetaldehyde	0.00004	0.206	1.85E-01
Acrolein	0.0000064	0.033	2.96E-02
Benzene	0.000012	0.062	5.56E-02
Ethylbenzene	0.000032	0.165	1.48E-01
Formaldehyde	0.00071	3.66	3.29E+00
Naphthalene	0.00000137	0.0071	6.34E-03
PAH	0.00000225	0.0116	1.04E-02
Propylene oxide	0.0000286	0.147	1.32E-01
Toluene	0.00013	6.71	6.02E-01
Xylene	0.000064	0.330	2.96E-01
<b>TOTAL</b>			<b>4.75</b>

The HAP emissions shown are for the three turbines only. The hours of operation for each turbine would be limited to 1,795 hours in a year.

### Dust control measures

Fugitive dust may be generated from exposed soil during construction. Using water wagons to regularly spray access roads and construction areas would reduce dust production. Exhaust from construction equipment and trucks may affect air quality, but the impacts would be minimal and short-term.

### Conclusion

Each of the proposed project's gas turbines would be limited to 1,795 hours of operation per year and the fire pump would be limited to 52 hours of operation per year. Gas heaters at the facility will be allowed to operate 8,760 hours per year. Based on these limitations, the proposed facility would be under the Prevention of Significant Deterioration Major Source thresholds and would require only a synthetic minor source air construction permit. At this time there is no reason to believe that such a permit could not be issued. The air impacts associated with this project are below all state and federal standards assuming the limited hours of operation described above.

### Geology

The Highway 23 Site is located within the Eastern Ridges and Lowlands Province of Wisconsin which is part of the Eastern Lake Section of the Central Lowlands Physiographic Region of the United States. Glaciers once covered this area.

The Eastern Ridges and Lowland Province of Wisconsin has experienced both glacial erosion and deposition. The surface features of this region are composed of glacial ground and end moraines that have subsequently eroded with time. Geologic features found at the Highway 23 Site are typical of those found within the Kettle Moraine. The Kettle Moraine surface is very irregular and has many kames, eskers, and potholes. The highest points are more than 200 feet above the surrounding landscape. West of the Kettle Moraine, the soils are mostly gently sloping. Elevation ranges from about 600 feet in the eastern part of the county to more than 1,200 feet at the highest point in the Kettle Moraine. The shore of Lake Michigan is very steep in the northern half of the county.

The physiography and distribution of soils is mainly the result of glacial action, which buried the underlying Niagara dolomite bedrock with unconsolidated deposits ranging from a few feet to several hundred feet in thickness. The Kettle Moraine ranges from one-half mile to four miles in width. It is made up mainly of glacial drift deposited by large masses of glacial ice known as the Lake Michigan and Green Bay Lobes. This area is a source of sand and gravel and has many gravel pits. Records indicate there has been significant underground mining in the western and southern portions of the state, but not in Sheboygan County. These historical mining records indicate that the site is unlikely to have been undermined or to have had surface mining activities.

Construction of the power plant would not affect the area's geology.

## **Topography and soils**

Elevations in the region range from 700 feet mean sea level (MSL) to 800 feet MSL in Sheboygan County. Area topography is relatively flat with 0-2 percent slope over most of the Highway 23 Site. Elevations on the property are between 750 to 730 feet MSL.

The Highway 23 Site is located on top of a gently rolling knoll with shallow slopes to the northwest and southwest. An erosion channel has developed across the southern half of the site and directs surface water flows to the southeast.

The U.S. Department of Agriculture (USDA) Soil Survey of Sheboygan County has identified three soil series at the project site, Kewaunee silt loam, Kewaunee silty clay loam, and Manawa silt loam.

### **Kewaunee silt loam**

Kewaunee silt loam is gently sloping (2 to 6 percent slope) soil on till plains. This soil dries slowly in spring and after periods of heavy rainfall. Reducing runoff and increasing the organic matter content help to control erosion and improve tillage. A surface layer consisting of dark reddish gray silt loam typically identifies this soil. Permeability is also moderate slow and available water capacity is moderate.

### **Kewaunee silty clay loam**

This gently sloping soil (2 to 6 percent) is also on till plains. This soil has a finer textured surface layer than the Silt Loam. This soil dries slowly in spring and after periods of heavy rainfall and has poor tillage in many places. Reducing runoff and increasing the organic matter content help to control erosion and improve tillage. A surface layer consisting of reddish brown silty clay typically identifies this soil. Permeability is also moderate slow and available water capacity is moderate.

### **Manawa silt loam**

This gently sloping soil (0 to 3 percent) is present in the lower elevation, drainage swale areas of the site. This soil dries slowly in spring and after periods of heavy rainfall and is subject to ponding in places. A surface layer consisting of dark grayish brown silt loam typically identifies this soil. Permeability is also moderate slow and available water capacity is moderate.

## **Impacts during and after construction**

Construction of the power plant would change the topography slightly because the proposed construction building would be slightly lower than the current elevation. To the north of the plant, the construction parking and equipment lay-down areas proposed to facilitate construction-related traffic would require earthwork.



Construction would remove and compact the soil on the construction site. Typically, construction of industrial facilities, such as power plants, can result in large quantities of soil particles being lifted into the air during construction. Soil type is a primary factor determining the amount of soil blown off the site during construction. During dry periods, the soils at this site could be susceptible to wind blown erosion.

The following measures can be used to limit fugitive dust:

- Surface and stabilize all access roads to prevent dust emissions from vehicle traffic.
- Minimize the extent of disturbed areas where removal of vegetation and topsoil is required.
- Install gravel surfaces on material lay-down areas.
- Stabilize and seed all graded areas as soon as possible to control fugitive dust, erosion, and runoff. Watering roads and work areas with tank trucks may be necessary to control dust.

## Water resources

No navigable drainage ways or streams are located within the project area boundaries of the Highway 23 Site. Two subtle swales, one on the power plant site and one in the construction lay-down area, convey surface water to an intermittent stream that flows into the Sheboygan River. The portion of this intermittent stream north of Highway 23 is considered navigable by DNR. The Sheboygan River is not listed as a trout stream or an Exceptional or Outstanding Resource Water by the DNR. The swale on the power plant site drains from west to east and is covered completely with tall fescue (*Festuca elatior*). The swale in the lay-down area flows from southwest to northeast and is cultivated.

## Water supply – high capacity wells

As described in Chapter 2, the proposed facility would include two high-capacity wells on site. Because the combined capacity of the two wells is greater than 70 gpm, each power plant site would require a DNR High-Capacity Well approval. Only one well would be used during the operation of the plant with the second well being reserved as a backup in the event the first well fails. The primary use for water at the proposed facility would be to increase the operating efficiency of the turbines in warm weather. Turbine efficiency can be improved by using either evaporative cooling or inlet fogging. PVG proposes to use evaporative cooling to increase turbine efficiency. This process would use water at a rate of about 61 gpm during peak load. Evaporative cooling would be used only when the ambient temperature is greater than 59°F. Other uses for water at the proposed plant include sanitary water, drinking water, and process water (compressor and turbine washing). The total annual water usage for the plant is estimated at approximately 7,567,200 gallons.

## Impacts of well construction and water use

### Surface waters

No springs were identified in the site vicinity. It has been assumed that impermeable layers would be present above the project well's producing zone. Combined with a relatively low average pumping rate, PVG anticipates no adverse impacts to surface water bodies.

### Residential and municipal wells

The nearest individual well is approximately 1,200 feet from the project site. Residential wells in the vicinity of the site range from 100 to 300 feet in depth. The project wells would be between 500 and

600 feet deep. The greater depth should enable the facility to draw water from deeper portions of the aquifer than those used by shallower residential wells. Based on transmissivity and storage values derived from a wellhead protection plan prepared by Rust Environmental for the town of Sheboygan Sanitary District 3, the DNR estimates that the impact to the nearest private well could be in the range of 2.2 to 3.6 feet after 365 days of pumping by the proposed facility. This value may or may not be significant depending on the depth of the private well and the level at which the pump intake is installed. The estimated impact is a worst case scenario based on 365 days of pumping, while the estimated hours of operation for the facility ranges between 1,200 and 1,800 hours per year which is equivalent to between 50 and 75 days of pumping.

PVG has constructed a test well at the Highway 23 site to test the potential for impacts to local groundwater supplies. The PVG test well is 504 feet deep with an 8-inch diameter casing. On March 9, 2004, PVG conducted a 27-hour pump test, pumping water at a rate of 188 gallons per minute. Two nearby wells, a residential well and a commercial well, were monitored. The residential well was located approximately 950 feet from the PVG test well and was estimated by PVG to be between 80 and 120 feet deep. The commercial well, located at a nearby quarry is approximately 6,700 feet from the test well and was estimated to be between 500 and 600 feet deep. The two monitor wells were checked every 2 hours with an acoustic probe to determine changes in static water level. Water levels in both wells did not change more than a foot during the entire test.

In addition to limited hours of operation, a 500,000-gallon on-site storage tank would be utilized to meet peak water demand during warm weather. The use of this tank would allow a lower pumping rate from the well, further minimizing impact on the supplying aquifer. Each well's capacity is anticipated to be approximately 60 gpm, however, the average pumping rate would be approximately 48 gpm. Based on the depth of the project's wells, on-site water storage, pump test results, and limited hours of operation, impacts to local wells are not anticipated.

While impacts to nearby wells are unlikely, PVG, as part of its CUP with the township, has agreed to replace or repair any private water supply well and system within one mile of the project site for the first three years of operation and within one-half mile thereafter that is negatively and materially impacted by the construction, testing or operation of the project (see Appendix B). Under Wisconsin case law, if an owner of a private well can demonstrate to the court that the operation of a high capacity well has adversely impacted the availability or quality of water in the private well, the owner of the high capacity well is responsible for resolving the problem, irrespective of the distance between the private well and the high capacity well. Wisconsin case law does not include an arbitrary distance at which a high capacity well operator must address impacts to private wells. Any distance quoted by the applicant is arbitrary, and does not comport with case law. They would be responsible for impacts to private wells within the definition provided by case law, irrespective of distance. Because aquifers are not homogenous, it is possible that an individual private well may be connected by a more permeable portion of an aquifer to a high capacity well, which may result in more pronounced impacts to that private well. That is the reason for some uncertainty judging potential impacts.

The DNR received a copy of the Well Construction Report for the test well and the pump test data. DNR staff performed an analysis of this information to derive a range of transmissivities and to model the cone of depression.

Using different methods, transmissivity ranged from 860 ft<sup>2</sup>/day to 1090 ft<sup>2</sup>/day, which represents a fairly narrow range of transmissivity. DNR staff used several methods to determine the theoretical drawdown at a well located about one quarter mile from the pumping well. These analyses

resulted in drawdown estimates ranging from about 4 feet to 6 feet. This assumes that the affected well is finished and withdraws its water from the dolomite formation below the unconsolidated formation, that the unconsolidated formation acts as an aquatard and that the pumped well is pumped at 60 gallons per minute for 365 days.

As a practical matter, a private well located one quarter mile from the pumping well that is withdrawing water from the same formation is not likely to be affected to any great extent. Wells at greater distances would be affected less.

These calculations reflect the additional impacts to the aquifer as a result of operation of the power plant well and do not address any current impacts to the aquifer resulting from the cumulative impacts of existing groundwater withdrawals.

The effects of cumulative impacts to an aquifer from the operation of multiple wells in any given area include the potential to decrease the water table elevation. Predicting such impacts is not within the scope of the DNR's review under existing law. Such prediction would require the development of a hydrogeological model which would take into account the cumulative effects of pumping from multiple wells within any given area.

The nearest municipal well is Sheboygan Well No. 2, located approximately 5.5 miles east of the site. No impacts due to site pumping are anticipated in this well, due to its relatively long distance from the facility and the facility's low average pumping rate. DNR estimates that the potential impact on the public utility well would be in the range of 1.7 feet assuming 365 days of pumping at the power facility.

### **Other impacts to groundwater**

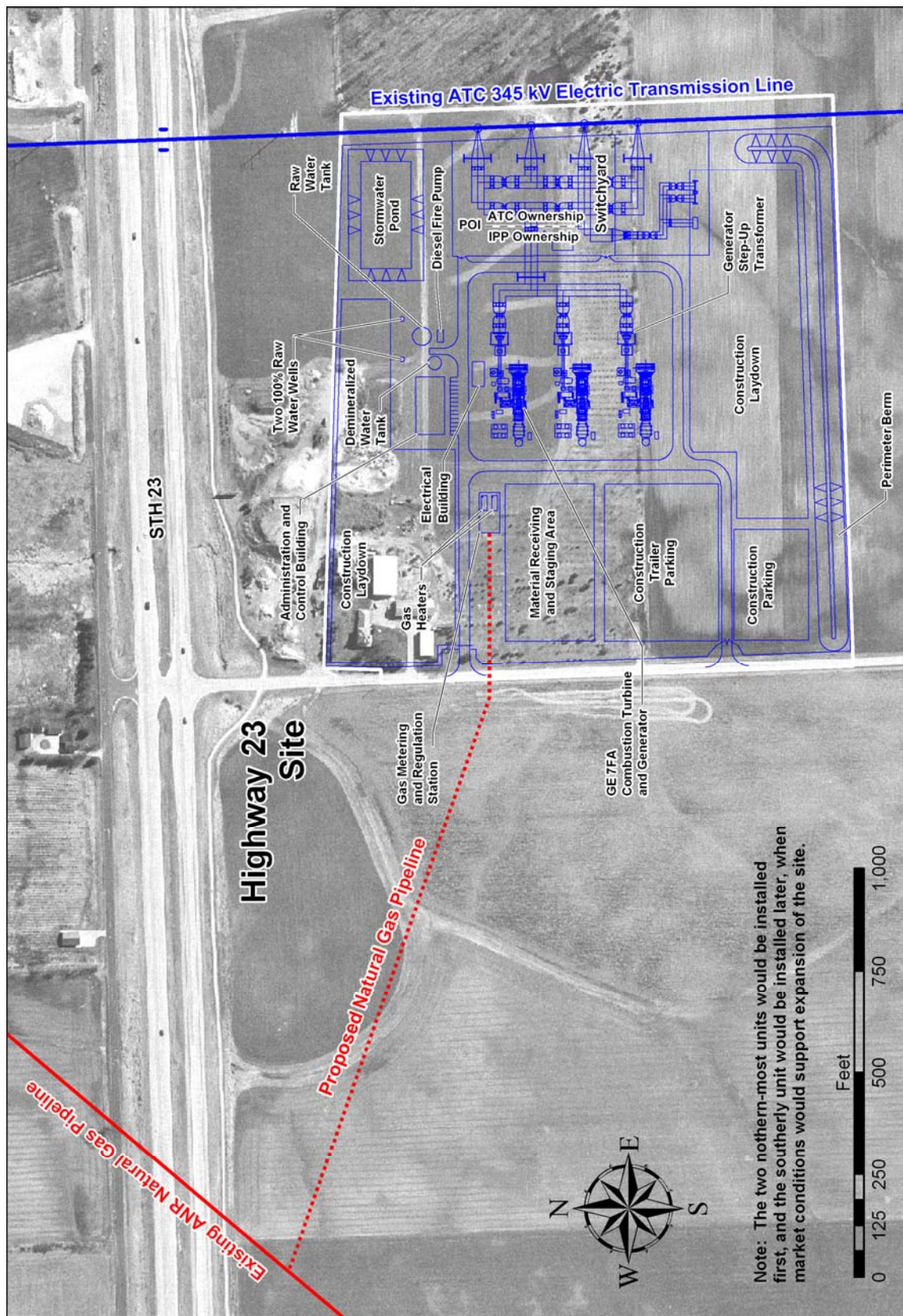
Based on geotechnical investigations conducted at the Highway 23 Site, each turbine foundation would consist of a rectangular concrete pad 6 to 6.5 feet thick, approximately 26 feet wide and 90 feet long. The foundations would be 8-12 inches above grade and would extend below the frost line. Drilled piers or pilings would not be required for the turbine foundations. Because foundation construction would not be very deep there would be no potential for any adverse effects to local groundwater supplies from construction activities.

## **Water discharge**

### **Construction site storm water and soil erosion control**

A considerable amount of soil would be moved during the construction of this project. Despite the relatively flat terrain, the construction site would be susceptible to significant soil erosion and runoff. To minimize soil erosion, a variety of Best Management Practices (BMP) erosion control techniques should be used. In general, best management practices for soil erosion include using silt fences and other barriers to limit erosion, revegetation as soon as possible after construction is complete, removal of excess soil to appropriate locations off the project site, and the construction of a storm water detention pond at an early stage in project development to control storm water runoff.

Figure 3-2 Highway 23 Site layout



Commerce is responsible for regulation and oversight of construction site storm water pollution prevention plans (SWPPP) under Wis. Admin. Code § Comm. 61. An SWPPP must be prepared before commencement of construction activities that result in the disturbance of 1 acre or more of land. The construction site SWPPP must be based on standards established in Wis. Admin Code § NR 216 which include the use of Wisconsin Construction Site BMP. For any power plant project, a NOI to construct must be filed with Commerce stating that an SWPPP has been prepared. PVG has filed an NOI with Commerce and has prepared an SWPPP for the project. Commerce does not conduct a review of the plan nor does Commerce inspect the site during construction. Copies of the plan must be made available on the construction site.

### **Construction impacts**

PVG's SWPPP for the project was prepared using The Wisconsin Construction Site Best Management Practice Handbook as a guide. Erosion controls that would be used on the site would include; temporary seeding of any soil stockpiles, mulch with tackifier, bonded fiber matrix, or rolled erosion control product on the slopes of a berm on the south edge of the property and on all cut or fill slopes along the edges of the property; vegetation and if necessary a turf reinforcement mat along the drainage swales throughout the property that would direct the surface storm water flow to the detention pond. The detention pond would be located in the northeast corner of the project site (see Figure 3-2). In addition, disturbed areas that are not paved or graveled would be seeded with appropriate vegetation within 30 days of final grading.

Sediment control devices would include sediment (silt) fence on the down hill side along the contour of any area that would drain overland runoff from the construction site onto adjoining properties. A series of vegetated drainage swales would be constructed to carry the storm water runoff to a detention pond located at the northeast corner of the site. If necessary, there would be check dams placed at designed distances within the drainage swales for additional flow velocity reduction and sediment trapping efficiency before the storm water flow reaches the pond. The berm on the south edge of the site would act as a diversion for the clean water above the site to flow east through an existing swale. Culverts directing storm water flow under roads would have a riprap pad at their outflow side for energy dissipation.

The storm water flow through the construction site would be managed with a series of vegetated drainage swales that would be sized to capture a minimum of a 10-year/24-hour storm event and a detention pond that would limit the discharge flow rate to the same as preconstruction conditions for the 100-year storm event. If necessary a series of check dams may be used in the swales to reduce flow velocity. These check dams would increase the runoff storage capacity and reduce runoff volumes due to an increase in infiltration behind the dams.

The DNR has also reviewed the construction site SWPPP. The storm water detention pond design would insure that, during storm events, no increase in stream bank erosion or flooding in the project area would occur. The pond would have a permanent wet pool which would provide water quality benefits by settling out suspended solids before discharging. However the outlet structure, as originally designed, did not meet DNR BMP standards. In January 2004, PVG submitted a revised outlet structure design to DNR that included a temporary end cap and gravel filter material on the primary outlet designed to limit flow. With this redesign, the permanent wet pool and plan design meets DNR BMP standards and should provide sufficient protection of water quality in and around the project during construction. Discharge from the site should not negatively affect receiving waters. . Weekly

and rain event erosion control inspections would be conducted throughout construction and all deficiencies would have to be repaired within 24 hours of detection.

### **Post-construction (operational) storm water management and erosion**

The DNR is responsible for oversight and regulation of the post-construction (operational) storm water management at the proposed facility. An SWPPP must be designed to achieve an 80 percent reduction of the sediment load that would be discharged from the proposed facility if no sediment or erosion controls were in place. The storm water detention and discharge system created for the construction phase of the project would remain in place and serve as the operational storm water and erosion control system for the facility.

The proposed post-construction storm water management plan at the Highway 23 Site includes a wet detention basin that incorporates water quality and water quantity. The pond was designed to maintain the predevelopment 2-year/24-hour and 100-year/24-hour storm event peak flow rates. Maintaining the 2-year/24-hour peak flow rates should not increase stream bank erosion at the Sheboygan River, and maintaining the 100-year/24-hour flood event flow rates will not increase flooding. The pond would have a permanent wet pool, which would provide water quality benefits by settling out suspended solids before discharging. The permanent wet pool should provide sufficient sediment removal to prevent negative impacts to the River.

The on-site retention basin would include a temporary end cap and gravel filter material on the primary outlet to limit the flow to the design conditions during the construction of the facility. Once construction is complete, these would be removed to allow the outlet to perform as designed during operations. Also, the standpipe would be perforated as designed for the conditions during construction of the facility. The effect of the perforations will be taken into account when sizing the pipe for post-construction conditions.

According to PVG's erosion control plan, erosion controls such as tracking pads, silt fence, erosion matting, vegetated swales, temporary stabilization and check dams would be installed. The runoff would be directed to the post-construction storm water management pond before leaving the site. The outlet structure would be modified to meet the Wisconsin Construction Site Best Management Practices Handbook.

Additionally, secondary containment for equipment and facilities that contain petroleum products would be provided as required by federal and state laws including 40 CFR Part 112 Oil Pollution Prevention and Commerce Chapter 10 Requirements. Secondary containment areas would be visually inspected. If an oil sheen is present, the contaminated storm water would be routed to an oil/water separator prior to discharge. If no sheen is present, the storm water would be released to grade and would flow through the drainage swales and eventually to the detention pond.

The operational erosion control plan meets the Wisconsin Construction Site Best Management Practices Handbook and should not have adverse affects to the receiving waters including the Sheboygan River.

### **Wastewater operational impacts**

Wastewater from the plant would consist of miscellaneous service water collected in floor drains, off-line turbine wash water, and sanitary wastewater. PVG proposes to use an inlet cooling technology known as evaporative cooling. Some water discharge from this system would be necessary in order to



limit contaminant concentrations. Total daily plant process wastewater discharge is not expected to exceed 29,040 gallons. Waste service-water, an estimated 115,200 gallons per year, would be collected in plant drains and routed to an oil-water separator. Water from on-line turbine washing would be evaporated in the turbine and incorporated into the plant exhaust. Wastewater discharge from off-line turbine washing is estimated at 36,000 gallons per year. Plant staff members are estimated to generate 21,600 gallons per year of sanitary wastewater. Total annual wastewater production from the plant is estimated at 3,657,600 gallons at an average rate of approximately 30,480 gallons per day.

Federal 40 CFR Part 423, and state (Wis. Admin. Code ch. NR 290), regulations establish effluent limitations. A WPDES wastewater discharge permit would limit the concentrations of potentially harmful constituents, and would include all the requirements of the federal and state regulations. Parameters typically are suspended solids, oil and grease, pH, and various metals. By meeting both federal and state water quality standards, adverse impacts to aquatic life would not be expected from the discharge of treated wastewater. WPDES permits are not needed to begin construction. The need for WPDES permits would be determined prior to the facility discharging effluent. Sanitary water would be diverted to a sanitary septic system similar to septic systems used in the immediate area.

## **Wetlands**

### **Highway 23 Site wetlands**

Based on DNR's Wisconsin Wetland Inventory and a site visit, there are no wetlands within the Highway 23 Site boundaries. Impacts to surrounding wetlands could result from soil erosion during construction. PVG has prepared a storm water and erosion control plan that utilizes The Wisconsin Construction Site Best Management Practices Handbook. If this plan is implemented, impacts to surrounding wetlands from construction on this site would be unlikely.

## **Floodplain**

Based on Federal Emergency Management Agency (FEMA) flood insurance maps the construction area on the Highway 23 Site is not within the 100-year floodplain.

## **Wildlife**

### **Expected wildlife impact**

The Highway 23 Site has been in agricultural use for decades. Wildlife species found in agricultural landscapes are usually species that thrive in disturbed habitats. Wisconsin species typically found in disturbed habitats include white-tailed deer, raccoon, opossum, rock dove, and a variety of sparrows and finches. The proposed project would reduce the available habitat in the area for these species by about 11 acres. However, this habitat type is abundant in the project area and the wildlife species in this area are abundant as well. No significant impact to wildlife or their habitats is expected as a result of this project.

### **Endangered and threatened species**

A review of the Natural Heritage Inventory database found no known occurrences of endangered, threatened, or special concern species or plant communities on the proposed project site. It is possible that an endangered or threatened species could be encountered during construction at the Highway 23 Site. However, because this site has been under agricultural development for a considerable period of time, this is highly unlikely.

The threatened pitcher's thistle (*Cirsium pitcheri*) is the only federally listed species known to occur in Sheboygan County. This species typically inhabits stabilized dunes and blowout areas. Neither habitat type is present on the proposed site and no occurrence of the pitcher's thistle has been recorded in the project area. No impact to this species is anticipated.

## **Agriculture**

This site currently is about 40 acres in size with about 30 acres in agricultural use. The entire facility would require a little over 11 acres. This includes about 6.3 acres for the power plant and an additional 5 acres for the switchyard and transmission interconnection. Roughly 29 acres would be open space. The proposed facility would permanently remove approximately 30 acres of agricultural land from production. Removal of 30 acres from agricultural production in this area of the state would not be considered a significant or serious reduction in farmlands. The overall impact to agriculture would be small.

## **Local community**

### **Site history**

The Highway 23 Site was first put into agricultural use in about 1920. The site was purchased by the current occupant in approximately 1978 and has been subsequently used for a variety of purposes including: agriculture, tree farming, and a landscaping business.

### **Land use**

This site is primarily in agricultural use at the present time; however a portion of the site is currently zoned as B-1 Commercial/Industrial. At the request of PVG, the town of Sheboygan Falls has re-zoned the remainder of the property from A-1 Agricultural to B-1 Commercial/Industrial. This zoning change would allow, as a conditional use, construction of the proposed facility on this site.

### **Changes in land use due to proposal**

The Highway 23 Site has about 30 acres in agriculture, with about 10 acres developed for a tree nursery and landscaping business. The proposed power plant and substation facilities would convert about 11 acres to industrial land use. There would be approximately 29 acres of open space. Land use would shift from agriculture to industrial.

This area of Sheboygan Falls Township supports a growing number of land uses other than agricultural. In the immediate vicinity of this site, existing land uses include not only agriculture but residential, commercial, and industrial. This site is closer to a growing number of commercial land uses than the alternate Sheboygan River Site. As a result this site is more suitable for industrial development than the alternate.

### **Proximity to residences**

There are 28 residential and business establishments within one-half mile of the proposed facility. Four residences are within one-quarter mile of the proposed project boundary. The closest homes are to the south of the proposed site.

### **Population in the general project area**

The 2002 population estimate for Sheboygan County is approximately 112,480. The county ranks 12<sup>th</sup> among Wisconsin counties in terms of population. The population is approximately 93 percent



Caucasian, 1.1 percent Black, 3.3 percent Asian, and 0.4 percent Native American. The population in the town of Sheboygan falls is 98 percent Caucasian. There are no minority households within one-half mile of the Highway 23 Site.

The median household income for the county is \$46,237. About 7.2 percent of families with children under five years old are considered to be living below the poverty level. The median income in the town of Sheboygan Falls is slightly higher than the county median. Median income within one-half mile of the Highway 23 Site is reported by PVG to be approximately \$59,107, which is significantly higher than the township or the county. Production, transportation, and material moving account for about 30 percent of the jobs in the county. Farming, fishing, and forestry occupations account for about 1 percent of employment. Manufacturing is the primary industry in Sheboygan County.<sup>7</sup>

### **Proximity to schools, hospitals, nursing homes, daycare centers**

No schools, daycare facilities, hospitals, and nursing homes are located within one-half of the proposed facility.

### **Public land**

There are no states or federally owned wildlife or natural areas located on or near the proposed Highway 23 Site. The Highway 23 Site is, however, located just south of the Old Plank Road bike/pedestrian trail which parallels the south side of Highway 23. The Old Plank Road trail is a 17-mile multi-use trail that follows the route of a pioneer road from Sheboygan to Greenbush where it joins the Ice Age Trail. The Highway 23 Site and the proposed natural gas pipeline lateral would both be located south of the trail and would therefore not directly impact this trail. Even though actual construction of the project would occur south of the bike trail, access to the construction sites would occur primarily off of Highway 23. Depending on how the site is accessed, construction crews and heavy equipment may need to cross the trail frequently. The trail base is not as stable as normal road base, so heavy equipment could cause damage to the trail. At this stage, the applicant plans to create two access points on the west side of the site along Bridgewood road. This plan would result in the trail being crossed using an existing road bed.

The trail should remain open during construction and operation of the proposed facility. Construction impacts to trail users may be minimized by construction scheduling, staging, and detours. Impacts to the trail should be coordinated with the Sheboygan County Department of Planning and Resources. Access off Bridgewood Road should result in no significant physical impacts to Old Plank Road Trail.

### **Local community services**

In general, the proposed project is a relatively self-contained facility and would not have a significant impact on municipal services or infrastructure.

### **Fire protection and emergency services**

The town of Sheboygan Falls Fire Department would provide the proposed facility with fire protection and rescue services during the construction and operation of the plant. The fire department serves the town of Sheboygan Falls, the Sheboygan County Memorial Airport and parts of the town of Lima. The fire department has one station that protects a mostly rural area of 43 square miles. The department is a public department whose members are volunteers. The station is located at N5480 County Road TT.

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<sup>7</sup> Wisconsin Department of Administration; U.S. 2000 census

Fire protection services from the Town fire department would be required during construction.

The proposed facility would be designed to be self-sufficient for fire protection in accordance with National Fire Protection Association (NFPA) standards. The combustion turbines would have independent fire detection and suppression systems. A fire loop and hydrants would be installed on-site and would take water from the raw water storage tank and fire pump. A minimum amount of water would be maintained in the tank at all times for fire protection service. A backup diesel fire pump would be installed in the event that electrical service to the primary pump is lost. Electrical transformers would be spaced in accordance with NFPA standards.

While the applicant would coordinate emergency response with the local fire authorities, once the fire suppression system is operational, the facility would most likely not require assistance from fire protection authorities. Fire danger from the facility would also be limited because there would be no on-site fuel storage. In addition, the facility would store very limited quantities of potentially hazardous materials on site. As a result, the proposed power plant is expected to have minimal impact to the Sheboygan Falls Fire Department. Emergency services other than fire protection would still fall on the local fire and police department.

The applicant has also agreed to make water stored in its raw water storage tank available to the local fire department in case of an extreme fire emergency.

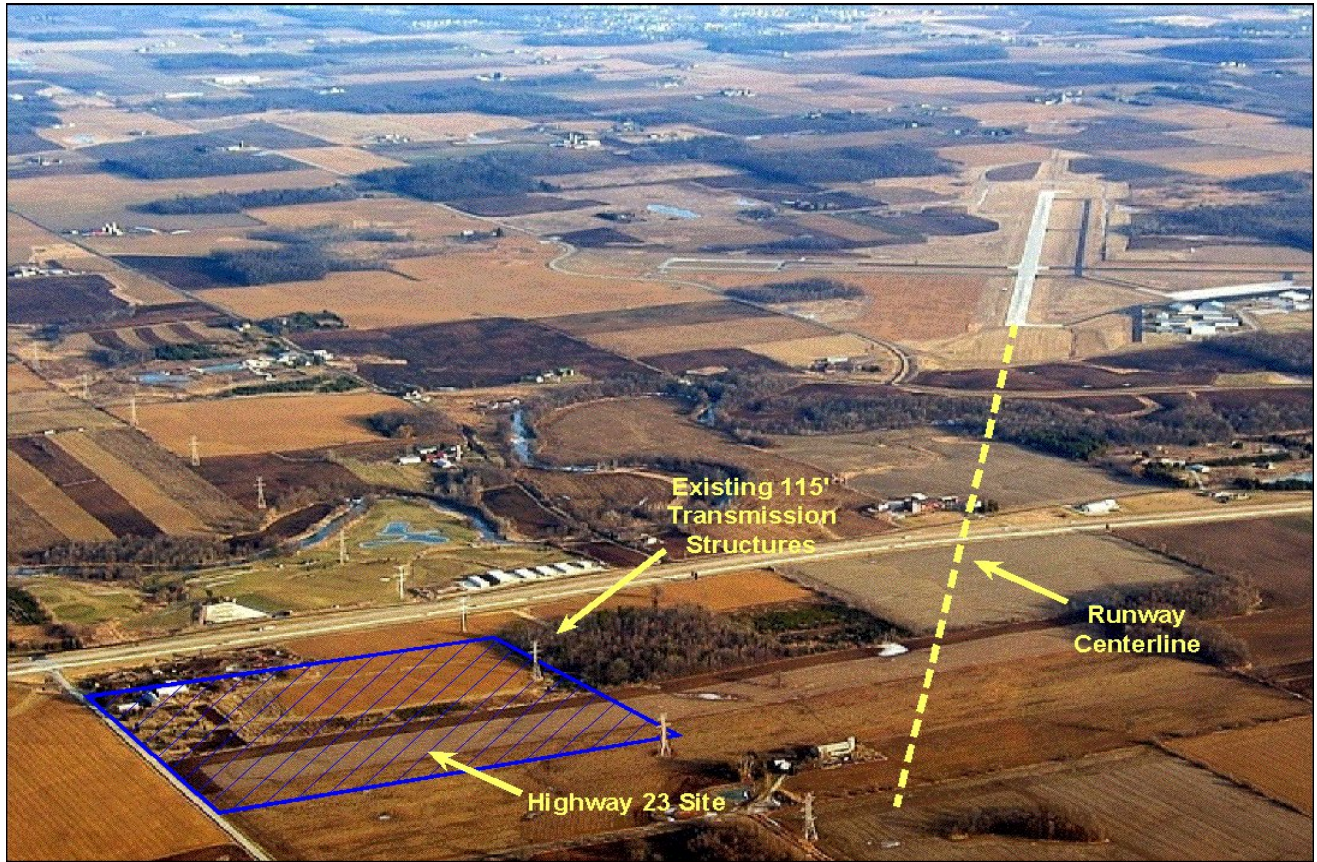
### **Sheboygan County Memorial Airport**

The Sheboygan County Memorial Airport is located approximately one and one-quarter miles northeast of the Highway 23 Site. However, the airport has a runway extension planned for the near future which would bring the main runway about 600 feet closer to the proposed construction site. There are two common concerns for aircraft safety when power plants are built near airports. One concern is the potential that tall structures at the facility might constitute an obstruction to aircraft. A second concern is the possibility that air turbulence created by the plant's exhaust stacks might endanger aircraft during landing and takeoff. Both the Wisconsin Department of Transportation (DOT) Bureau of Aeronautics and the Federal Aviation Administration (FAA) review projects where aircraft safety may be a concern.

For this site, an extended runway centerline passes about one-quarter mile south of the proposed facility's exhaust stacks (see Figure 3-3). At approximately 75 feet, the stacks would be the tallest structures for the proposed project. The FAA has determined that the 75-foot tall stacks would not constitute an obstruction hazard. There is an electric transmission line located adjacent to the proposed site that lies between the site and the airport. The transmission structures are approximately 115-feet tall. Because they are significantly taller than the proposed exhaust stacks, they are considered the controlling objects in terms of aircraft safety. The DOT has also reviewed a thermal plume study submitted by the applicant and has determined that any plume produced would not create a hazard to air navigation into or out of the airport.

On December 18, 2003, the applicant filed with the FAA for a federally required review of aircraft safety. The FAA has issued a "Determination of No Hazard to Air Navigation" for the three stacks at the Highway 23 Site.

**Figure 3-3 Aerial view of airport runway and the Sheboygan River Site**



## Hazardous waste

### During construction

A number of chemicals may be used and stored on site during the construction of the facility. They are listed in Table 3-6 below.

**Table 3-6 Expected chemical and material usage during construction**

Material/Chemical	Purpose	Storage Method
Diesel Fuel	Equipment Fuel	Aboveground, truck-mounted tank
Gasoline	Vehicle Fuel	Aboveground, truck-mounted tank
Medium and Heavy Weight Oil	Equipment Lubrication	55-gallon drums
Waste Oil	Waste from Equipment Lubrication	55-gallon drums
Light Lubrication Oil	Small Equipment Lubrication	5-gallon containers
Solvents	Cleaning Equipment	1-gallon containers
Paint	Prime and Finish Painting	55-gallon drums/5 gallon containers

Chemicals such as diesel fuel, gasoline and lubrication oil would be used for the operation and maintenance of construction equipment. Other chemicals such as solvents and paints may be needed at various times during construction.

Diesel and gasoline fuel would be temporarily stored on site during construction activities in tanks within above ground containment areas. Containment areas would consist of dikes or truck-mounted tanks that are capable of holding at least 110 percent of the storage tanks' capacity in the event of a leak. Maintenance trucks would fuel construction equipment. The construction superintendent would be responsible for reporting spills and overseeing the cleanup and disposal of any affected soil and spill clean-up materials. Minor spills of fuel or other chemicals would be cleaned with absorbent pads or other manufactured absorbent products stored on the maintenance truck or in a marked cabinet that is readily accessible. Larger-quantity spills are not expected to exceed the capacity of a 55-gallon drum and would be removed from within the containment area using a vacuum tank truck or pumped into a suitable container. Soil or absorbent materials that have come in contact with fuel or chemicals would be immediately removed, stored, and disposed of in accordance with state regulations. The equipment would be kept in good working condition so that the potential for transmission, hydraulic, or brake fluid leaks can be minimized. The chemical storage areas would include hose stations, spill kits, safety showers, eye wash stations, and first aid kits.

Procedures for the proper storage of hazardous materials, spill containment and cleanup have been well developed for industrial sites. The following procedures should be implemented to insure protection of the surrounding environment:

- All hazardous materials should have proper labels and identification.
- Hazardous materials should be stored on a slab with a sand berm or engineered prefabricated containment to prevent and control spills.
- Keep Material Safety Data Sheets on file and available to all employees and contractors.

In the event of a spill, the following corrective actions should be taken:

- Absorb with sand or other sorbent, and contain as quickly as possible.
- Place sorbent in suitable container(s) for disposal.
- Notify licensed landfill or hazardous waste transportation and disposal company of intent to dispose.
- Notify the DNR, and other regulatory agencies as required.
- Note exposure to ground or surface water, and take steps to minimize impacts.

### **During operation**

The proposed power plant would generate less than 100 kilograms per month of hazardous materials wastes. The power plant would therefore qualify as a Conditionally Exempt Small Quantity Generator of hazardous waste.

The facility may generate small quantities of wastes such as used solvents/paints or used oil that are regulated as hazardous waste in accordance with the EPA's Resource Conservation and Recovery Act (RCRA) regulations. PVG would ensure that all wastes are appropriately handled on site and disposed of at a facility properly licensed under RCRA and are hauled to that disposal site by a licensed transportation firm. A list of materials used during power plant operation is shown in Table 3-7 below.

**Table 3-7 Expected chemical and material usage during operation**

Material/Chemical	Purpose	Storage Method
Natural Gas	Fuel	None
Generator Lube Oil	Lubrication	55-gallon drum
Combustion Turbine Lube Oil	Lubrication	55-gallon drum
Cleaning Detergent	Combustion turbine blade water washes	Wash water skid tank
Sulfuric Acid (93%)	pH control and neutralize chemical spills	55-gallon drum
Sodium Hydroxide (50%)	Neutralize chemical spills	55-gallon drum

## Roads

### Existing roads

The Highway 23 Site is bordered on the north by Highway 23 and to the west by Bridgewood Road.

### Access to site

Access to the site would be off of Bridgewood Road. Two access points will be utilized. No new access roads will be required.

## Traffic

### Construction traffic

Highway 23 and Bridgewood Road would be the primary access roads for the project. Highway 23 forms the northern boundary for the site. Equipment deliveries and construction workers would access the site from these roads. Some heavy equipment would be delivered to a rail spur in the Sheboygan/Sheboygan Falls area. From the rail spur, heavy equipment would be transported to the site by truck via Interstate 43, Highway 23, and Bridgewood Road. Heavy haul schedules and routes would be coordinated with the appropriate local and state agencies.

Approximately 10 heavy equipment deliveries would be expected for the power block. Approximately 1,100 truck deliveries, excluding heavy equipment, would be expected throughout the 12-month construction period. The frequency of truck deliveries would be the highest during the early stages of construction when concrete is being delivered. The number of deliveries would decrease as construction progresses. The majority of the truck deliveries would be expected to be via Highway 23. At peak construction, up to 120 personal vehicles would be expected to enter and leave the plant site daily based on an estimated average vehicle occupancy (AVO) of 1.3 persons per vehicle. During non-peak construction periods, approximately 60 personal vehicles would be expected to enter and leave the site each day. The owner intends to work with local government officials to develop a mutually acceptable traffic plan to accommodate the additional construction traffic. On-site construction parking would be provided at the site.

### Impacts to roads and local traffic patterns

Traffic along Highway 23 would be expected to increase, coinciding with the arrival and departure of construction workers and the delivery of equipment and supplies to the site. Highway 23 traffic is normally moderate. During the construction period there would be an increase in local traffic patterns and density. Increased traffic would consist of both small private vehicles and large trucks and construction transports. There may be periods of traffic congestion as heavy equipment and trucks



move in and out of the site. Large equipment components would be delivered by rail and loaded on a lowboy transporter. The transporter would be pulled by truck to the plant construction site. Arrangements would be made as necessary with local units of government to arrange for any additional traffic control. Damage to local roads is not expected, but in the event that damage does occur, PVG would repair the damage.

### **Traffic during operation**

When the plant is fully commercial, there would be private vehicle traffic from approximately six to eight employees. Truck deliveries during operation of the plant would include trash pickup, general supplies, replacement parts, lubricants and other consumables. The applicant expects that the facility would not need to use demineralized water during operation. The water quality at the site is adequate for use in the evaporative coolers with cycling of the water at two times without treatment. However, if scaling does begin to present an operational issue over time, a portable softening system may be used to treat a portion of the groundwater. By using a 50/50 percent blend of treated and raw water, it is estimated that the facility might require water conditioning at a rate of once every two weeks. The softening process would require one semi-trailer truck visit every two weeks to treat water. Based on current estimates, the traffic during plant operation would be limited and would not be expected to significantly impact traffic flow.

Due to the limited volume of additional traffic that would be generated during operation of the plant, there are no permanent changes expected to existing roads or traffic signals. PVG would develop two entrances to the plant from Bridgewood Road for truck traffic, employees and craft labor.

### **Fogging and icing**

The proposed project would be a simple-cycle combustion turbine power plant. The facility would not utilize cooling towers, and as a result, no cooling tower fogging, icing, or visible plumes would occur.

## **Noise**

### **Terminology and measurements**

Everyday sounds are comprised of sound waves of many different frequencies. The frequency of a sound wave is measured in Hertz (Hz), with one Hz equal to one sound wave cycle per second. While the frequency range of human hearing is generally accepted to be 20 to 20,000 Hz, the ear is not equally sensitive to sounds through that entire range.

Sound levels are measured with a device called a sound level meter in units known as decibels (dB).

When sound level measurements are taken, it is customary to use weighting systems in conjunction with the sound level meter to approximate the frequency sensitivity of human hearing. Three internationally standardized weighting characteristic curves exist for sound measurements: characteristic A for sound levels below about 55 dB, characteristic B for sound levels between about 55 and 85 dB, and characteristic C for sound levels above about 85 dB. When sound levels are measured using a weighting characteristic, the measurements are designated by adding the characteristic curve letter after the abbreviation for decibels, such as 58 dBA.

The existing noise environment at the proposed sites and anticipated noise from the proposed facility have been analyzed in terms of A-weighted (dBA) and C-weighted (dBC) sound scales and an examination of the variation among frequency bands from 16 Hz to 8,000 Hz. The dBA scale enables

an estimate of the noise that people would hear. The dBC scale enables an estimate of low-frequency noise that people might hear or feel. The frequency band analyses might reveal whether certain types of noise are prominent and need to be controlled in certain ways.

Noise level scales (as measured in decibels (dB)) are logarithmic rather than linear. This means that the decibel levels emitted by two different noise sources cannot simply be added together to determine the combined effect of those noise sources. As a generally accepted rule of thumb, two noise sources emitting sound at the same dB level would have a combined noise impact of 3 dB greater than either source alone. The same rule can be applied to weighted sound levels as well.

As a point of reference, sound experts generally agree that the human ear can detect changes in dBA roughly as follows:

- A change of 3 dBA or less is barely perceptible.
- A change of 5 dBA is perceptible.
- A change of 10 dBA is perceived as either twice or half as loud.

Noise also decreases with distance from the source. Assuming there are no obstructions between the noise source and receptor, the noise from a single source decreases by approximately 6 dBA for every doubling of the distance. For a noise source that is a continuous line, such as a highway, the noise levels will generally decrease by about 3 dBA with a doubling of the distance from the source<sup>8</sup>. In addition to distance, noise levels can be affected by intervening structures or objects such as buildings, trees, and shrubs.

### **Applicable local ordinances**

There are no noise ordinances for the town of Sheboygan Falls or Sheboygan County. The town of Sheboygan Falls has a Public Nuisance ordinance that addresses loud noises. Section 5.05 (d) 10 Public Nuisance states that a nuisance consists of “All loud, discordant and unnecessary noises or vibrations of any kind.” Nuisances are prohibited. This section does not establish decibel levels that are considered unacceptable.

### **Existing noise environment**

In accordance with the PSC’s Noise Assessment Measurement Protocol, an ambient noise level survey was conducted in the project area on January 8 and 9, 2003. Sound level measurements were collected to establish background sound levels prior to construction and operation of the proposed project. Sound level readings were recorded over 10 minute periods during morning (6:00 – 8:00 a.m.), midday (12 noon – 2 p.m.), evening (6:00 – 8:00 p.m.) and late night hours (10 p.m.– 12 midnight) at locations MP1, MP2, A2, B2, C2, and D1 (see Figure 3-4).

Octave band ( $L_n$ ) unweighted sound levels were measured, in addition to A-Weighted and C-Weighted decibel levels. Observations of predominant noise sources and weather conditions were also noted.

Weather conditions during the surveys were favorable for noise studies. Temperatures ranged from 36 to 55 degrees F and wind speeds averaged between 5 and 10 mph. Ambient noise sources during the survey of the Highway 23 Site were dominated by noise from car and truck traffic. Table 3-8 shows some of the ambient sound measurements taken around the Highway 23 Site. The table lists the  $L_{eq}$  (equivalent continuous sound level—a measure of average energy representing the steady state noise level

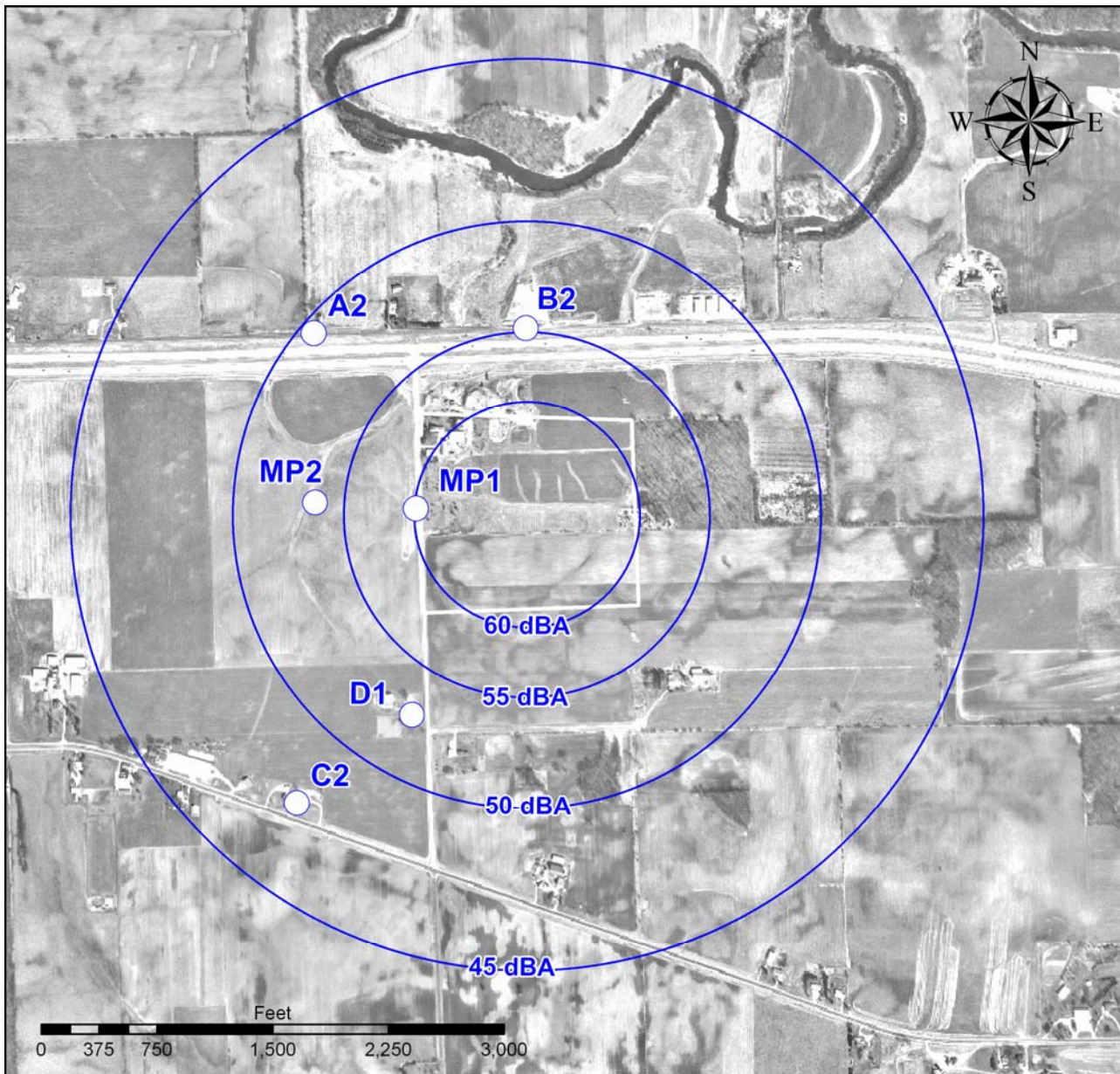
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<sup>8</sup> B. B. Marriott, Practical Guide to Environmental Impact Assessment.

during the measurement period) reported in both dBA and dBC, and the  $L_{10}$  and  $L_{90}$  (sound levels exceeded 10 percent and 90 percent of the time during the measurement period) all reported in dBA.

Background ambient sound levels ( $L_{90}$ ) appear to be primarily influenced by local traffic. These background noise levels typically ranged from about 31 to 57 dBA (see Table 3-8). The equivalent continuous sound level ( $L_{eq}$ ) measured between 50 and 71 dBA. When using the C weighting, the  $L_{eq}$  ranged from 65 to 86 dBC. The higher dBC levels indicate a relatively high component of low frequency sounds in the ambient environment. Traffic noise is the source of low frequency sound in the area immediately surrounding the Highway 23 Site.

**Figure 3-4 Noise measurement points for the Highway 23 Site and sound contours expected during operation of three turbines**





**Table 3-8 Ambient sound measurements around the Highway 23 Site - measurements were taken on January 8 and 9 2003**

Measurement Point	Time	L <sub>eq</sub> (dBA)	L <sub>eq</sub> (dBC)	L <sub>10</sub> (dBA)	L <sub>90</sub> (dBA)
MP1	6-8 AM	60	70	52	44
MP1	Noon-2 PM	57	65	42	31
MP1	6-8 PM	64	72	56	47
MP1	10 PM-12 AM	62	75	55	45
MP2	6-8 AM	52	66	49	39
MP2	Noon-2 PM	51	77	50	42
MP2	6-8 PM	64	84	56	45
MP2	10 PM-12 AM	57	70	49	39
D1	6-8 AM	50	69	48	42
D1	Noon-2 PM	50	79	48	39
D1	6-8 PM	53	79	52	43
D1	10 PM-12 AM	51	78	50	40
C2	6-8 AM	65	74	64	43
C2	Noon-2 PM	59	73	54	38
C2	6-8 PM	64	80	61	41
C2	10 PM-12 AM	62	81	58	41
A2	6-8 AM	71	77	71	57
A2	Noon-2 PM	68	76	68	46
A2	6-8 PM	69	86	69	54
A2	10 PM-12 AM	66	82	67	48
B2	6-8 AM	70	75	70	55
B2	Noon-2 PM	67	73	68	52
B2	6-8 PM	68	80	69	49
B2	10 PM-12 AM	65	86	65	44

## Construction noise impacts

### Individual equipment noise

Construction noise would come from a series of intermittent sources, most of which would be diesel engine drive systems that power most construction equipment. It is likely that during peak construction, construction work would continue for 10 to 16 hours per day. Typical construction noises, modeled for a similar power plant project in southeastern Wisconsin, are illustrated in Table 3-9. Some noises during construction could be very loud (ranging from 120-134 dBA at 50 feet from the event) occurring during short-term steam or air blows in the final stages of plant installation.

### Comparison of equipment noise with the measured L<sub>10</sub>

The noise from construction operations might be compared with the L<sub>10</sub> statistic from the ambient sound measurements listed previously. This statistical parameter is intended to quantify the sound level that is exceeded 10 percent of the time and is an indication of the maximum noise levels reached in the ambient environment. In this case, sources for L<sub>10</sub> are most likely from traffic noise. A comparison with the L<sub>10</sub> values in Table 3-8 shows that every piece of construction equipment on the construction

site listed in Table 3-9 could have the potential to be louder and more distracting at 50 feet than local ambient sources.

**Table 3-9 Estimated maximum noise levels for typical construction equipment (dBA)**

Construction Equipment	Maximum Noise Level (dBA) Typical Range = 50 Feet from Source
Steam blow off (4-8-inch line)	124-134
Air blow off (4-8-inch line)	120-130
Blasting	93-94
Dozer (250-700 horsepower)	85-90
Front end loader (6-15 cubic yards)	86-90
Trucks (200-400 horsepower)	84-87
Grader (13-16-foot blade)	83-86
Shovels (2-5 cubic yards)	82-86
Portable generators (50-200 kW)	81-87
Derrick crane (11-20 tons)	82-83
Mobile cranes (11-20 tons)	82-83
Concrete pumps (3-150 cubic yards)	78-84
Tractor (3/4 to 2 cubic yards)	77-82
Unquieted paving breaker	75-85
Quieted paving breaker	69-77

Noise could be reduced by keeping all diesel engine mufflers in good working order, and timing most noise for daytime or first-shift periods to the extent possible. The steam and air blows could be limited to daytime hours with some sort of notification. Construction noise impacts, while potentially significant, would be temporary.

## Operation impacts and mitigation

### Estimated noise impact of project

Consultants for PVG used a three-dimensional acoustical model to predict noise levels at off-site residences near the proposed site. Estimated turbine sound power levels were obtained from the equipment manufacturer. The estimate of the proposed facility's noise emissions were based on standard equipment configuration noise mitigation measures that include air inlet silencing, exhaust silencing, and an acoustical enclosure for the combustion turbine unit. Figure 3-3 shows the sound level contour that would result when the proposed plant is running at the Highway 23 Site. The sound level contour includes only the noise from the proposed plant and does not include existing ambient sound levels.

### Low frequency sound and vibration

Low frequency noise and vibration have been identified in some combustion turbine plants in Wisconsin. It is felt as a vibration or rattling of structures or objects and is not clearly identifiable when measuring or estimating sound using the A-weighted decibel scale. It is customary to take noise measurements using the A-weighted scale to approximate the sensitivity of the human ear across the frequency range of human hearing. However, because the C-weighted scale measures more of the low-frequency sounds, it can give a better indication of the potential for low-frequency vibration. Airborne sound waves in the frequency range below 40 Hz, if high enough in magnitude and energy, can couple with frame building walls and windows and cause vibration. Studies provided by PVG indicate that the

low frequency sound levels originating from the proposed power plant would not cause noticeable vibrations in walls and windows of nearby buildings.

Simple-cycle combustion turbines, like the one proposed in this project, discharge their exhaust gases directly to the atmosphere through exhaust silencers, which do not silence well below 40 Hz. Most large combustion turbines create very high levels of acoustic energy below 40 Hz, and this energy can radiate as airborne sound waves and easily propagate over large distances. For the GE model PG 7231(FA), the turbine exhaust would be the loudest low frequency sound source.

### Expected noise impact

The estimated noise emissions for the proposed power plant have been compared to the existing ambient noise environment. An analysis was conducted to estimate the changes in the ambient noise level in and around the proposed facility. Estimates were based on three turbines running simultaneously. Table 3-10 shows the measured ambient  $L_{eq}$  in both dBA and dBC and the expected increase in noise levels at each measurement point. The analysis indicates that the proposed plant would slightly increase the noise levels at measurement point D1, which is located on the corner of Bridgewood and Wren Streets. The expected increase ranges between 2 and 4 dBA and between 0 and 2 dBC. These increases are relatively small. The human ear is barely able to detect changes of 3 dB or less. Changes expected at the remaining measurement points range between 0 and 1 dBC.

**Table 3-10 Projected noise impact at sensitive receptors near the Highway 23 Site.**

Measurement Point	Time	Measured Ambient ( $L_{eq}$ , dBA)	Projected increase in Ambient (dBA)	Measured Ambient ( $L_{eq}$ , dBC)	Projected increase in Ambient (dBC)
D1	6-8 AM	50	4	69	2
D1	Noon-2 PM	50	4	79	0
D1	6-8 PM	53	2	79	0
D1	10 PM-12 AM	51	3	78	0
C2	6-8 AM	65	0	73	0
C2	Noon-2 PM	59	0	73	0
C2	6-8 PM	64	0	80	0
C2	10 PM-12 AM	62	0	80	0
A2	6-8 AM	70	0	77	1
A2	Noon-2 PM	68	0	75	1
A2	6-8 PM	69	0	86	0
A2	10 PM-12 AM	66	0	82	0
B2	6-8 AM	70	0	74	1
B2	Noon-2 PM	67	0	73	1
B2	6-8 PM	68	0	79	0
B2	10 PM-12 AM	65	0	86	0

The turbine exhaust stacks would be the primary noise sources on site. This type of noise source tends to have a fairly high low frequency component. However, the existing sources of ambient noise also provide a fairly significant contribution of low frequency noise. Traffic noise, especially along Highway

23, is the main contributor of low frequency noise in the area. This project is not expected to impact the local noise environment in any significant way. Road traffic associated with the facility would be limited to operating personnel and supply or maintenance trucks that would enter the site on an infrequent basis.

Noise from the project can be limited by installing and maintaining sound attenuation devices on exhaust and intake structures. In addition, PVG has determined that the three turbines would be housed inside a building. This should further reduce noise impacts to the surrounding area. Because of the relatively small number of vehicles entering and leaving the proposed facility during operation, traffic noise would also not be expected to increase due to plant operations.

In order to insure that all efforts are made to reduce noise from the proposed facility, a Commission order approving the project could include requirements that all proposed noise attenuation methods be installed and maintained and that actual noise levels not exceed predicted values. In addition, a Commission order could also require a post construction noise analysis to determine if the projected noise created by the plant meets the estimates reported in this EIS.

## **Electromagnetic fields (EMF)**

Concerns over exposure to EMF are often raised during power plant and transmission line construction cases. Electric and magnetic fields occur whenever and wherever we use electricity. A magnetic field is created when electric current flows through any conductor such as a power line or the electrical wiring in a home. Other sources of magnetic fields include electric blankets, fluorescent lights, appliances, and electric baseboard heating. Because there are so many common sources of EMF, we are exposed to a wide variety of magnetic fields every day. Magnetic fields are measured or estimated in units of Gauss or milligauss (mG) (a milligauss is equal to 1/1000<sup>th</sup> of a Gauss). Measurements of power line EMF are always reported in mG.

Scientists have found only weak and inconsistent epidemiological associations between exposure to power frequency EMF and human health. Several epidemiological studies have shown a statistical association between the risk of childhood leukemia and the kind of electric wires outside the home. However, many epidemiological studies have found no link to leukemia. Cellular studies and studies exposing test animals to EMF have shown no link between EMF and disease. Taken as a whole, the biological studies conducted over the last 25 years have not been able to establish a cause-and-effect relationship between exposure to EMF and human health effects. In addition, there have been no plausible biological mechanisms discovered by which exposure to power frequency EMF might cause human disease.

There may be some circumstances where exposure to the electric field produced by a line may result in inappropriate pacing for pacemakers or inappropriate operation of defibrillators.

For more information on EMF and human health you may wish to obtain a free publication produced by the Public Service Commission of Wisconsin entitled EMF – Electric & Magnetic Fields. This publication is also available on the PSCW web site at <http://psc.wi.gov>.

The power plant itself would not contribute directly to changes in EMF outside the plant boundaries. EMF created in power plants and substations, unlike those created by power lines, are extremely complex. Because of that complexity, even though power plant EMFs may be relatively high near the

source, they dissipate quickly over a relatively short distance. Homes in the area would not experience changes in EMF levels as a direct result of plant operations.

## **Visual landscape**

### **Existing landscape**

The Highway 23 Site is located largely in a farming landscape. The site is flat, open, and gently rising to the south. While in a rural location, this site is located immediately south of a four-lane highway and adjacent to a high-voltage electric transmission line. A landscaping business is now located on the north side of the property. There is also a small commercial development located just north of the site along Highway 23. The project would have an aesthetic impact to residences located near the site. In particular, residences located to the south would have a clear view of the facility. From an aesthetic perspective this project would have an impact.

### **Prominent plant features**

The most prominent features of the proposed plant would be the 75-foot exhaust stacks and the electric substation. Plant equipment would be visible from residences south and west of the project. Also residences along Highway 23 would have a clear and unobstructed view of the new facility.

### **Planned new external lighting**

Site lighting requirements may be greater during the construction period than for the completed plant. The construction lighting impact would be temporary. However, the site would be permanently lighted for security and operational purposes. PVG's lighting plans include non-glare, high cutoff fixtures. These fixtures are designed to focus light downward and where possible would be directed to entryways, walkways, or equipment requiring illumination. Trespass lighting would be minimized as much as possible. The high cutoff fixtures would, to some extent, reduce nighttime lighting impacts.

The tallest structure at the site would be the exhaust stacks at 75 feet. The Highway 23 Site is located just over one mile southwest of the Sheboygan County Memorial Airport. The FAA is presently reviewing the project and will make a determination if lighting of the stacks would be required for aircraft safety.

### **Mitigation of aesthetic impact**

Sensitive residential receptors located southwest of the Highway 23 Site would have unobstructed views of the power plant. These residences sit at a higher elevation than the plant site which would make screening the plant more difficult. Residences to the south are approximately 20 feet higher in elevation than the plant site. Some relief to aesthetic impact might be achieved by creating site screening berms and planting tall growing shrubs and trees. Residential receptors north of the site are set at or below the proposed plant's elevation and may be more easily screened by berms and plantings. Nighttime visual impacts would be reduced by using limited and down-focused lighting. Because this area is zoned for commercial and industrial development, aesthetic impacts are, in the long term, unavoidable.

## **Historical and archeological sites**

### **Known and listed historic properties**

Under Wis. Stat. § 44.40, the Commission must determine if project construction and operation could affect historic properties listed with the WHS. The listings at the WHS show no traditional cultural, archeological, or historic architectural properties on the Highway 23 Site or along the natural gas

pipeline route that could be affected by the construction and operation of the proposed power plant. A search of the WHS database identified two cultural resources within one-half mile of the Highway 23 Site. These resources include a prehistoric camp and a family cemetery. On November 19-21, 2002, PVG conducted a cultural resources survey in the project area. This survey found no archaeological resources eligible for inclusion in the National Register of Historic Places. All known historic properties near the site are expected to be distant enough from the construction area that no adverse impacts would be expected from construction and operation of the facility.

## **Potential impacts**

In the event human remains or historic/prehistoric artifacts are found during construction, all construction activities must cease in the vicinity of the find and the State Historic Preservation Officer (SHPO) would be notified. PVG would need to work with state authorities to coordinate protection and preservation of cultural resources.

## **Local economics**

### **Shared revenue**

The owners of power plants do not pay property tax but instead pay, to the state, a gross receipts tax. By law, the state then distributes shared revenue payments to local municipalities based on the plant's nameplate capacity. Tax distributions would be made to local government based on a rate of \$2,000 per MW of installed capacity. Additional payments may be made to local governments based on certain incentives identified in state statutes. Additional payment incentives are paid for: new baseload plants, power plants using alternative energy sources, cogeneration plants, and power plants built on existing power plant or brownfield sites. The proposed project is not eligible for additional incentive payments.

Annual payments begin the year after the plant becomes operational and continue as long as the plant produces electricity. Payments are divided between the county and township with the county receiving two-thirds and the township one-third of the total formula amount. In this case, PVG would initially install two turbines. Using a nameplate rating of 177 MW per turbine, the initial installed capacity for the project would be approximately 354 MW. This would result in a total shared revenue payment of \$708,000 per year. Of this total, approximately \$467,280 per year would go to Sheboygan County and approximately \$240,720 per year would be paid to the town of Sheboygan Falls. Should the applicant install a third turbine, the payments to the county and township would increase accordingly. If approved, the first payments for this project would be made the year after the plant becomes operational. The present schedule would put the first payment to local government in 2006. The total dollar amount distributed is limited to the municipality's population multiplied by \$300 or the county's population multiplied by \$100. No payments would be distributed to the municipality or county during the construction phase of the project. Payments would be made to local governments regardless of who owns the power plant facilities.

## **Jobs**

The proposed project would create both temporary and permanent employment. Construction is anticipated to take about 10 to 12 months. The project would require up to 150 construction employees at times of peak activity. The work force would include a number of skilled and professional workers, including civil, structural, and electrical engineers; electricians; instrument and control technicians; steam fitters; carpenters; and general construction workers. Some of these workers may come from the surrounding community.

Six to eight permanent employees would operate the proposed power plant. The employees may include technical professionals including an engineer or plant manager, supervisory staff, and skilled technicians and operators. The annual payroll would be approximately \$450,000.

## **Electric transmission system**

### **Transmission facilities required**

The proposed facility would be connected to the state's transmission system through a 345 kV switchyard, which would be looped to the existing 345 kV transmission line located adjacent to the proposed site. If the project is approved, the new switchyard and connections to the transmission system would be built by ATC. ATC will apply to the Commission for authority to construct the needed transmission facilities at a later date.

The switchyard would be located inside the proposed Highway 23 Site (see Figure 3-2). The connections with the existing 345 kV line would also be built. All construction for the new interconnections would take place entirely within the ROW of the existing transmission line. It is expected that no new ROW would be required.

### **Construction impact**

While no application for the transmission work has been filed with the Commission, additional long-term impacts associated with the construction of the transmission facilities are not expected. The switching station would be inside the proposed site boundary. New transmission structures may be located inside the existing transmission line ROW. Those structures would most likely require concrete foundations. Impacts would be limited to short term construction impacts. Access to the construction site and the addition of new turning structures would result in some impacts to the land within the existing ROW. Any area under cultivation within the existing ROW could be affected. Limiting construction to the winter can minimize impacts to existing crops. Farm operators are required to be compensated for any lost or damaged crops. Longer term impacts resulting from soil compaction can be mitigated by proper aeration of the soil once construction is complete.

Impacts to wildlife, endangered and threatened species and forest lands are not expected. ATC would compensate farmers for any loss of crops during construction.

### **Transmission line EMF**

Magnetic field changes associated with the transmission system as a result of this project have not been modeled. Additional information about EMF would be provided in the ATC application for transmission facilities some time in the future.

### **Radio and television interference**

Power lines do not usually interfere with normal television and radio reception. In some cases, interference is possible at a location close to the ROW because the broadcast signal is weak or the receiving equipment is of a poor quality. At other times the transmission line may be in need of maintenance. If interference occurs because of the power line, ATC would be required to remedy the problem so that reception is restored to its original quality.

## **Safety**

Transmission lines must meet the requirements of the Wisconsin State Electric Code. The code establishes design and operating standards, and sets minimum distances between wires, poles, the ground, and buildings. The code represents the minimum standards for safety.

Wis. Admin. Code PSC 114.234 prohibits the construction of transmission lines over residential dwellings, swimming pools, wells, or above ground uncovered fuel storage tanks. Although they may not be prohibited by code, building other structures within a transmission ROW is strongly discouraged.

## **Natural gas pipeline**

### **Proposed route**

The proposed natural gas line for the Highway 23 Site consists of a 16-inch diameter pipeline connecting the proposed power plant site to existing interstate natural gas pipelines owned by ANR. The ANR pipelines run generally northeast-southwest and are located west of the Highway 23 Site.

The proposed gas pipeline route is approximately 1,650 feet long. It would be built on the west side of the Highway 23 Site, crossing Bridgewood Road and continuing west across an agricultural field to the existing ANR pipelines (see Figure 3-2).

### **Potential for impacts**

The analysis of the proposed gas pipeline routes is based on routing information provided in PVG's application. ANR is expected, at a later date, to file an application with FERC for authorization to construct the natural gas lines. FERC's authorization, if granted, would determine the final route of the gas lines, along with construction conditions that must be met in building the gas lines.

Given that ANR has yet to apply to FERC for a construction certificate, the gas line route alternatives must be considered preliminary and subject to change. The analysis in this document assumes that the route provided in PVG's application will be what ANR will propose to FERC. In addition, the analysis assumes that construction practices and conditions that FERC typically requires for construction of new natural gas lines would apply to the new gas lines to serve the PVG project. It should be noted that there is a chance that the route PVG would include in its construction application to FERC could differ from those described in this document. There is also the chance that the construction practices and conditions applicable to the lines could also differ from those described in this document.

## **Agriculture**

The majority of the proposed natural gas line, approximately 1,650 feet, crosses an active agricultural field. Construction of the natural gas pipeline could directly affect about two acres of agricultural land.

The construction of a new, large diameter, natural gas pipeline involves significant excavation of soil and requires the use of heavy construction equipment. The nature of the construction needed to build a new pipeline through agricultural lands can create both short- and long-term problems. A number of construction practices can be used to reduce or eliminate many of the potential impacts to agricultural lands.

Pipeline construction through agricultural lands can result in short-term losses and temporary yield reductions in crops near the construction activities. Crops growing within both the permanent and temporary easement areas would be removed for the construction of the pipeline, likely resulting in the



total loss of those crops in the year of construction. Dust from construction work can coat leaves on nearby crops, encouraging crop diseases or reducing yields. The effects from dust coating are limited to the year of construction.

The construction of a new gas pipeline can also result in significant long-term agricultural impacts if proper construction practices are not followed. Poor construction practices can lead to long-term effects on agricultural productivity along the pipeline. Potential problems can arise from the mixing of topsoil with subsurface soil layers, from the compaction of the soil, from an increase in rocks in upper soil levels, and from damage to tile drainage systems. The remainder of this section is a general discussion of the potential long-term agricultural impacts from pipeline construction and construction practices designed to reduce such impacts.

Interstate pipeline companies, such as ANR, when building new interstate gas pipelines under FERC construction certificates, generally must follow pipeline construction practices contained in the FERC Upland Erosion Control, Revegetation and Maintenance Plan (Upland Plan). The Upland Plan was developed to address the major problems arising from new pipeline construction through agricultural lands. The Upland Plan contains many pipeline construction practices that have been developed to substantially reduce long-term agricultural impacts.

For the purposes of the analysis in this document, it is assumed that ANR would follow the FERC Upland Plan in constructing the new natural gas lines needed to serve the PVG project.

The construction of a large diameter pipeline requires the excavation of a deep trench in which to bury the pipeline. Mixing of the topsoil layer with subsoils removed from the trench can have significant impacts on future agricultural productivity. In addition, the repeated movement of heavy construction equipment over the construction work area can cause rutting of the soil, which can lead to topsoil mixing with lower subsoil layers, again resulting in decreased agricultural productivity.

The FERC Upland Plan includes provisions for limiting the potential effects of topsoil mixing. The Upland Plan calls for topsoil segregation in all agricultural areas except for pasture lands. Topsoil segregation consists of removing the topsoil and storing it in a pile at the edge of the construction work area. Subsoils removed from the pipeline trench are stored in a second pile separated from the topsoil pile. The pipeline builder under the Upland Plan has the choice to segregate topsoil from either the entire work area or from just over the trench and from under the subsoil storage area. The Upland Plan requires the top 12 inches of topsoil to be segregated if the topsoil is deeper than 12 inches. For areas with topsoil less than 12 inches deep, every effort is required to be made to segregate the entire topsoil layer.

Construction of large diameter pipelines requires heavy equipment that travels for extended periods over the work space of the new pipeline's ROW. The repeated passage of heavy machinery on the soil surface causes compaction. It is most severe when soils are at a moisture content that is high enough to lubricate the soil particles so that they slide into compaction arrangements. Compaction is also influenced by soil texture. The effects of compaction are reduction of root penetration, low friability, reduced pore space, and a decrease in the rate of downward movement of moisture. This affects the rate of crop growth and germination. Water infiltration is also reduced, causing increased surface runoff, which may lead to accelerated erosion. Severe compaction is difficult to eliminate through normal agronomic practices or freeze-thaw action.

The Upland Plan requires the builder of a pipeline to test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas affected by construction. The Upland Plan requires severely compacted agricultural areas to be plowed with deep tillage implements to reduce compaction. In areas where topsoils and subsoils have been segregated during construction, the Upland Plan requires the subsoil to be deep plowed before the topsoils are replaced. Alternatively, the Upland Plan allows for making arrangements with the landowner to plant and plow under a “green manure” crop such as alfalfa to decrease soil bulk density and improve soil structure. Additional tilling is called for if subsequent construction and cleanup activities result in further compaction.

Rocks in the soil can damage farm implements and reduce crop production. Rocks can be brought to the surface when soil is removed and returned to the pipeline trench. After the pipe is lowered into the trench, backfilling begins. The trench is backfilled with spoil material previously excavated from the trench. To protect the pipeline from abrasion from rocks, the construction contractor uses a backfilling-padding machine which sorts the spoil material, allowing finer sized materials to “pad” the pipe before the larger sized material is returned. If the contractor returns the sorted material of concentrated rock to the upper layers of the trench, excessive rocks near the surface could result from future frost heaving or deep plowing.

The Upland Plan requires removal of excess rock from at least the top twelve inches of soil to the extent practicable in agricultural and residential areas. The size, density, and distribution of rock on the construction work area should be similar to adjacent areas not disturbed by construction. The Upland Plan indicates that the construction contractor should make diligent efforts to remove stones greater than four inches if the off-ROW areas do not contain stones greater than four inches. The Upland Plan also indicates that a landowner may approve other rock size provisions in writing as part of the easement agreement.

### **Endangered and threatened species and habitats**

A review by the DNR Bureau of Endangered Resources and the U.S. Fish and Wildlife Service indicated that the proposed natural gas line routes would not affect any endangered, threatened, and special concern species.

### **Wetlands and surface waters**

The proposed natural gas pipeline route does not cross any wetlands or other water bodies.

### **Forested land**

The proposed natural gas pipeline route does not cross any forest land.

### **Archeological and other historic resources**

The area that would be disturbed by construction of the natural gas pipeline has been reviewed to identify any historic properties that potentially could be affected by the proposed project. Historic properties include archeological sites, historically significant buildings and other resources of historic value. A review of Wisconsin Historical Society records identified no previously identified historic properties along the gas pipeline route.

### **General construction effects**

Air quality impacts during construction of the natural gas pipeline facilities are expected to be minimal. These impacts would be short-term and local. Fugitive dust may be generated from exposed soils during site clearing and gas pipeline construction. Dust generated by vehicular traffic related to gas pipeline construction could be a problem for localized areas under dry conditions. The extent of fugitive dust generated during construction would depend on the level of construction activity and the moisture content and texture of the soils being disturbed. Exhaust from construction equipment and trucks may have a minor effect on air quality in the immediate vicinity of the construction activities, but would be limited to the construction period.

Localized increases in noise would occur from construction of the natural gas pipeline. Although individuals in the immediate vicinity of the construction activities would experience an increase in noise levels, this effect would be local and temporary. Nighttime noise levels normally would be unaffected by construction activities since most construction work on the natural gas pipeline would occur during daylight hours.

The construction of the natural gas pipeline could also create a nuisance disturbance. Noise and vibrations from construction equipment could be bothersome to nearby residences. These would be short-term and would end when construction is complete.



# CHAPTER 4

## Chapter 4 – Environmental Review of Sheboygan River Site

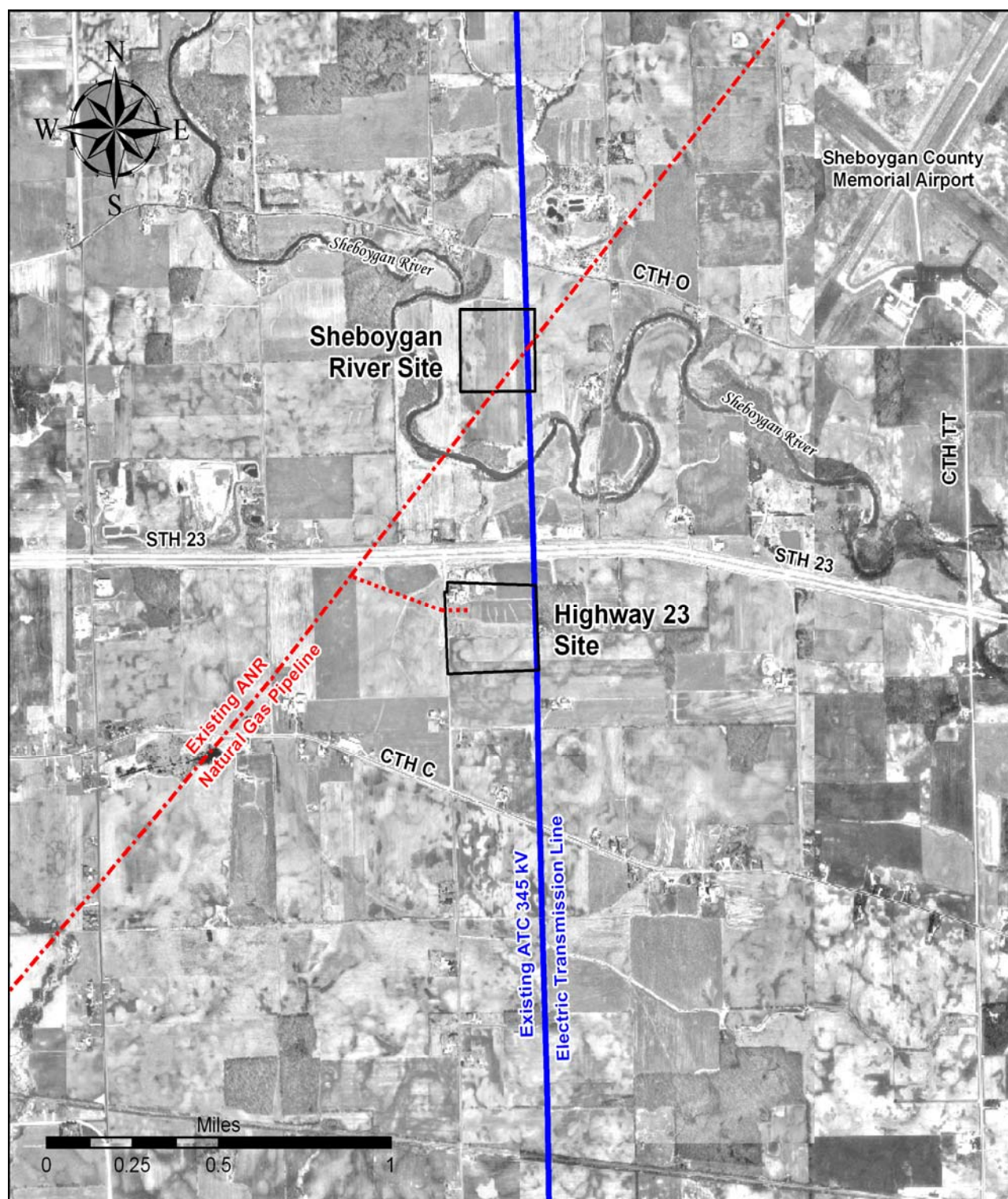
### **SITE LOCATION AND DESCRIPTION**

The Sheboygan River Site is located on the south side of County Road O in the town of Sheboygan Falls, in Sheboygan County. The site lies in the SW ¼ of the SW ¼ of Section 6, Township 15N, and Range 22E (see Figure 4-1).

This site is bordered on the northwest and west by the Sheboygan River. The land is in agricultural use and is zoned as A-1 Exclusive Agriculture. The property has no direct access to local roads.

PVG has discussed the purchase of the Sheboygan River Site with the landowner. PVG currently does not own and does not have an option to buy the land for the Sheboygan River Site.

Figure 4-1 Project site location – Sheboygan River Site



## NATURAL RESOURCES

### Air quality

#### Source description

The sources of air pollutant emissions from the proposed power plant are described in the construction permit application, which was submitted to the DNR on January 17, 2003. Emissions from the proposed project would be generated from the following individual sources:

- Three 177 MW simple-cycle combustion turbines firing natural gas
- Two 9 mmBtu/hr gas heaters
- One 350 hp diesel-fired fire pump

However, the primary source of air emissions from this project would be the combustion turbines. Air emissions of concern for this project would be the criteria pollutants listed below. PVG would fuel the turbines only with natural gas and does not propose to use a back-up fuel, such as fuel oil, at the plant site.

#### National Ambient Air Quality Standards (NAAQS)

The federal Clean Air Act requires the EPA to establish NAAQS for air pollutants that could adversely impact human health or welfare. NAAQS have been established for the following pollutants, collectively referred to as “criteria pollutants.”

- Sulfur dioxide (SO<sub>2</sub>)
- Nitrogen oxides (NO<sub>x</sub>)
- Carbon monoxide (CO)
- Particulate matter less than 10 microns in diameter (PM<sub>10</sub>)
- Ozone—including VOCs
- Lead

The NAAQS are established by the EPA to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly, and to protect public welfare, including protection against decreased visibility, injury to animals, crops, vegetation and buildings. Allowable levels of air emissions called PSD increments are established to prevent significant deterioration of air quality in areas with clean air, and to maintain those areas in compliance with the NAAQS. PSD monitoring thresholds are established to determine whether local ambient air quality monitoring is required in order to accomplish the objective of maintaining an area in compliance with NAAQS or PSD increments.

The EPA has delegated its Clean Air Act permitting and review authority to the DNR. The state of Wisconsin regulates air pollutant emissions under Wis. Admin. Code ch. NR 400-499 and has adopted the EPA primary and secondary standards. EPA describes an area as “nonattainment” if the ambient air quality standard for one or more of the criteria pollutants listed above is not met.

In areas such as Sheboygan County, where concentrations of the criteria air pollutants comply with federal air quality standards, new or modified sources of air emissions are subject to PSD permitting requirements if potential emission rates exceed major source thresholds.

The U.S. EPA has proposed to designate Sheboygan County as a moderate non-attainment area for the 8-hour ozone standard. This would affect new or modified facilities in Sheboygan County classified as major sources of ozone precursors that receive air permits after the effective date of this designation. For a moderate ozone nonattainment area, this applies to emission sources of 100 t/yr. or greater of VOCs or NO<sub>x</sub>, which would include this facility. If the air permit for this facility is issued after the effective date of the nonattainment designation for Sheboygan County, the facility would need to meet Lowest Achievable Emission Rate (LAER) emission limits and obtain offsets for NO<sub>x</sub> and VOC; or be subject to air permit conditions which would make the facility a minor source of VOCs and NO<sub>x</sub> (see Air Quality in Chapter 3). At present, the effective date for the designation change is expected to be June 15, 2004.

### **Estimated potential emissions during operation**

PVG has submitted air emission data and a permit application to DNR for only the Highway 23 Site. Because the two sites are very close to one another, the air emissions analyses for both sites are identical and have the same outcome (see Chapter 3, pages 36-39).

### **Conclusion**

Each of the proposed project's gas turbines would be limited to 1,795 hours of operation per year and the fire pump will be limited to 52 hours of operation per year. Gas heaters at the facility would be allowed to operate 8,760 hours per year. Based on these limitations, the proposed facility would be under the Prevention of Significant Deterioration Major Source thresholds and would require only a synthetic minor source air construction permit. At this time there is no reason to believe that such a permit could not be issued and the air impacts associated with this project are below all state and federal standards assuming the limited hours of operation described above.

### **Geology**

The Sheboygan River Site is located within the Eastern Ridges and Lowlands Province of Wisconsin which is part of the Eastern Lake Section of the Central Lowlands Physiographic Region of the United States. Glaciers once covered this area.

The Eastern Ridges and Lowland Province of Wisconsin has experienced both glacial erosion and deposition. The surface features of this region are composed of glacial ground and end moraines that have subsequently eroded with time. Geologic features found at Sheboygan River Site are typical of those found within the Kettle Moraine. The Kettle Moraine surface is very irregular and has many kames, eskers, and potholes. The highest points are more than 200 feet above the surrounding landscape. West of the Kettle Moraine, the soils are mostly gently sloping. Elevation ranges from about 600 feet in the eastern part of the county to more than 1,200 feet at the highest point in the Kettle Moraine. The shore of Lake Michigan is very steep in the northern half of the county.

The type and distribution of soils is mainly the result of glacial action, which buried the underlying Niagara dolomite bedrock with unconsolidated deposits ranging from a few feet to several hundred feet in thickness. The Kettle Moraine ranges from one-half mile to four miles in width. It is made up mainly of glacial drift deposited by large masses of glacial ice known as the Lake Michigan and Green Bay Lobes. This area is a source of sand and gravel and has many gravel pits. Records indicate there has been significant underground mining in the western and southern portions of the state, but not in Sheboygan County. These historical mining records indicate that the site is unlikely to have been undermined or to have had surface mining activities.



Construction of the power plant would not affect the area's geology.

## **Topography and soils**

The topography for the Sheboygan River Site is very similar to the Highway 23 Site. The proposed Sheboygan River Site lies adjacent to and east of the Sheboygan River approximately one mile west of the Sheboygan County Memorial Airport. The site is bounded by County Road O to the north and is contiguous with agricultural land bounded by the Sheboygan River to the east, south, and west. The grade of the land slopes gently to the southwest across the site toward the river.

Elevations in the region range from 700 feet mean sea level (MSL) to 800 feet MSL in Sheboygan County. Area topography is relatively flat with 0-2 percent slope over most of the Sheboygan River Site. Elevations on the property are between 725 to 760 feet MSL.

The U.S. Department of Agriculture (USDA) Soil Survey of Sheboygan County has identified three soil series at the project site, Kewaunee silt loam, Kewaunee silty clay loam, and Manawa silt loam series.

### **Kewaunee silt loam**

Kewaunee silt loam is gently sloping (2 to 6 percent slope) soil on till plains. This soil dries slowly in spring and after periods of heavy rainfall. Reducing runoff and increasing the organic-matter content help to control erosion and improve tillage. A surface layer consisting of dark reddish gray silt loam typically identifies this soil. Permeability is also moderate slow and available water capacity is moderate.

### **Kewaunee silty clay loam**

This gently sloping soil (2 to 6 percent) is also on till plains. This soil has a finer textured surface layer than the silt loam. This soil dries slowly in spring and after periods of heavy rainfall and has poor tillage in many places. Reducing runoff and increasing the organic-matter content help to control erosion and improve tillage. A surface layer consisting of reddish brown silty clay typically identifies this soil. Permeability is also moderate slow and available water capacity is moderate.

### **Manawa silt loam**

This gently sloping soil (0 to 3 percent) is present in the lower elevation, drainage swale areas of the site. This soil dries slowly in spring and after periods of heavy rainfall and is subject to ponding in places. A surface layer consisting of dark grayish brown silt loam typically identifies this soil. Permeability is also moderate slow and available water capacity is moderate.

## **Impacts during and after construction**

Construction of the power plant would change the topography slightly because the proposed construction building would be slightly lower than the current elevation. The construction parking and equipment lay-down areas proposed to facilitate construction-related traffic would require earthwork.

Construction would remove and compact the soil on the construction site. Typically, construction of industrial facilities, such as power plants, can result in large quantities of soil particles being lifted into the air during construction. Soil type is a primary factor in determining the amount of soil blown off the site during construction. During dry periods, the soils at this site could be susceptible to wind blown erosion.

The following measures can be used to limit fugitive dust:

- Surface and stabilize all access roads to prevent dust emissions from vehicle traffic.
- Minimize the extent of disturbed areas where removal of vegetation and topsoil is required.
- Install gravel surfaces on material lay-down areas.
- Stabilize and seed all graded areas as soon as possible to control fugitive dust, erosion, and runoff. Watering roads and work areas with tank trucks may be necessary to control dust.

## **Water resources**

No navigable drainage ways or streams are located within the project area boundaries of the Sheboygan River Site. The Sheboygan River does; however, flow adjacent to the site's northwest and southwest corners and some of the surface water that falls on the site is conveyed directly into the Sheboygan River. The Sheboygan River is not listed as a trout stream or an Exceptional or Outstanding Resource Water.

### **Water supply – high capacity wells**

As described in Chapter 2, the proposed facility would install two high-capacity wells on site. Each power plant site will require a separate DNR High-Capacity Well approval. Only one well would be used during the operation of the plant with the second well being reserved as a backup in the event the first well fails. The primary use for water at the proposed facility would be to increase the operating efficiency of the turbines in warm weather. Turbine efficiency can be improved by using either evaporative cooling or inlet fogging. PVG proposes to use evaporative cooling to increase turbine efficiency. This process would use water at a rate of about 61 gpm during peak load. Evaporative cooling would be used only when the ambient temperature is greater than 59°F. Other uses for water at the proposed plant include sanitary water, drinking water, and process water (compressor and turbine washing). The total annual water usage for the plant is estimated at approximately 7,567,200 gallons.

### **Impacts of well construction and water use**

#### **Surface waters**

No springs were identified at the site. However, the Sheboygan River is within 225 feet of the site. It has been assumed for both sites that impermeable layers would be present above the project well's producing zone. Combined with a relatively low average pumping rate; PVG anticipates no adverse impacts to surface water bodies.

#### **Residential and municipal wells**

PVG has not conducted a complete study of potential well impacts for the Sheboygan River Site. However, this site is located only one-half mile north of the Highway 23 Site which strongly suggests that well impacts will be similar.

The nearest individual well is approximately 1,500 feet from the project well sites. Residential wells in the project area typically range from 100 to 300 feet in depth. The project wells would be between 500 and 600 feet deep. The greater depth should enable the facility to draw water from deeper aquifers than those used by shallower residential wells. Based on transmissivity and storage values derived from a wellhead protection plan prepared by Rust Environmental for the Town of Sheboygan Sanitary District 3, the DNR estimates that the impact from wells located at the Highway 23 Site could be in the range of 2.2 to 3.6 feet after 365 days of pumping by the proposed facility at the nearest private well. For this analysis, it has been assumed that the same would be true for wells at the Sheboygan River Site.

The values from this study may or may not be significant depending on the depth of the private well and the level at which the pump intake is installed. Since the conclusion that no impact was likely is uncertain at the time the draft EIS was issued, PVG proposed to conduct a pump test and to construct a mathematical model in an effort to better define the aquifer characteristics in the area and to be better able to predict whether operation of the facility's wells could have an impact on nearby domestic wells. PVG constructed the test well at the Highway 23 site. The PVG test well was 504 feet deep with an 8 inch diameter casing. On March 9, 2004, PVG conducted a 27-hour pump test, pumping water at a rate of 188 gallons per minute. Two nearby wells, a residential well and a commercial well, were monitored. The residential well was located approximately 950 feet from the PVG test well and was estimated by PVG to be between 80 and 120 feet deep. The commercial well, located at a nearby quarry is approximately 6,700 feet from the test well and was estimated to be between 500 and 600 feet deep. The two monitor wells were checked every 2 hours with an acoustic probe to determine changes in static water level. Water levels in both wells did not change more than a foot during the entire test. This estimated impact is a worst case scenario because the estimated hours of operation for the facility ranges between 1,200 and 1,800 hours per year which is equivalent to between 50 and 75 days of pumping.

In addition to limited hours of operation, a 500,000-gallon on-site storage tank would be utilized to meet peak water demand during warm weather. The use of this tank would allow a lower pumping rate from the well, further minimizing impact on the supplying aquifer. Each well's capacity is anticipated to be approximately 60 gpm, however, the average pumping rate would be approximately 48 gpm. Based on the depth of the project's wells, on-site water storage, and limited hours of operation, impacts to local wells are not anticipated.

While impacts to nearby wells are unlikely, PVG, as part of its CUP with the township, has agreed to replace or repair any private water supply well and system within one mile of the project site for the first three years of operation and within one-half mile thereafter that is negatively and materially impacted by the construction, testing or operation of the project (see Appendix B).

Under Wisconsin case law, if an owner of a private well can demonstrate to the court that the operation of a high capacity well has adversely impacted the availability or quality of water in the private well, the owner of the high capacity well is responsible for resolving the problem, irrespective of the distance between the private well and the high capacity well. Wisconsin case law does not include an arbitrary distance at which a high capacity well operator must address impacts to private wells. Any distance quoted by the applicant is arbitrary, and does not comport with case law. They would be responsible for impacts to private wells within the definition provided by case law, irrespective of distance. Because aquifers are not homogenous, it is possible that an individual private well may be connected by a more permeable portion of an aquifer to a high capacity well, which may result in more pronounced impacts to that private well. That is the reason for some uncertainty judging potential impacts.

The DNR received a copy of the Well Construction Report for the test well and the pump test data. DNR staff performed an analysis of this information to derive a range of transmissivities and to model the cone of depression.

Using different methods, transmissivity ranged from 860 ft<sup>2</sup>/day to 1090 ft<sup>2</sup>/day, which represents a fairly narrow range of transmissivity. DNR staff used several methods to determine the theoretical drawdown at a well located about one quarter mile from the pumping well. These analyses resulted in drawdown estimates ranging from about 4 feet to 6 feet. This assumes that the affected well is finished and withdraws its water from the dolomite formation below the unconsolidated formation,

that the unconsolidated formation acts as an aquatard and that the pumped well is pumped at 60 gallons per minute for 365 days.

As a practical matter, a private well located one quarter mile from the pumping well that is withdrawing water from the same formation is not likely to be affected to any great extent. Wells at greater distances would be affected less.

These calculations reflect the additional impacts to the aquifer as a result of operation of the power plant well and do not address any current impacts to the aquifer resulting from the cumulative impacts of existing groundwater withdrawals.

The effects of cumulative impacts to an aquifer from the operation of multiple wells in any given area include the potential to decrease the water table elevation. Predicting such impacts is not within the scope of the DNR's review under existing law. Such prediction would require the development of a hydrogeological model which would take into account the cumulative effects of pumping from multiple wells within any given area.

The nearest municipal well is Sheboygan Well No. 2, located approximately six miles southeast of the site. No impacts due to site pumping are anticipated in this well, due to its relatively long distance from the facility and the facility's low average pumping rate. DNR estimates that the potential impact on the public utility well would be in the range of 1.7 feet assuming 365 days of pumping at the power facility.

### **Other impacts to groundwater**

The soil and topography of this site is the same as those described for the Highway 23 Site. Based on geotechnical investigations conducted at the Highway 23 Site, each turbine foundations would consist of a rectangular concrete pad 6 to 6.5 feet thick, approximately 26 feet wide and 90 feet long. The foundations would be 8 to 12 inches above grade and would extend below the frost line. Drilled piers or pilings would not be required for the turbine foundations. The applicant believes that the same type of foundations would be adequate for the Sheboygan River Site. Because foundation construction would not be very deep there would be no potential for any adverse effects to local groundwater supplies from construction activities.

## **Water discharge**

### **Construction site stormwater and soil erosion control**

A considerable amount of soil would be moved during the construction of this project. Despite the relatively flat terrain, the construction site would be susceptible to significant soil erosion and runoff. To minimize soil erosion, a variety of BMP erosion control techniques should be used. In general, best management practices for soil erosion include using silt fences and other barriers to limit erosion, revegetation as soon as possible after construction is complete, removal of excess soil to appropriate locations off the project site, and the construction of a storm water detention pond at an early stage in project development to control storm water runoff. Any storm water and erosion control plan for this site must be designed to provide adequate protection to the nearby Sheboygan River.

Commerce is responsible for regulation and oversight of construction site storm water pollution prevention plans (SWPPP) under Wis. Admin. Code § Comm. 61. An SWPPP must be prepared before commencement of construction activities that result in the disturbance of one acre or more of land. The construction site SWPPP must be based on standards established in Wis. Admin Code § NR 216

which include the use of Wisconsin Construction Site Best Management Practices. For any power plant project a NOI to construct must be filed with Commerce stating that an SWPPP has been prepared. PVG has filed an NOI with Commerce and has prepared an SWPPP for the project. Commerce does not conduct a review of the plan nor does Commerce inspect the site during construction. Copies of the plan must be made available on the construction site.

### **Construction impacts**

PVG's SWPPP for the project were prepared using The Wisconsin Construction Site Best Management Practice Handbook as a guide. This plan was designed primarily for the Highway 23 Site, however, the same plan, with modifications, is expected to function similarly for the Sheboygan River Site. Erosion controls that would be used on the site would include; temporary seeding of any soil stockpiles, mulch with tackifier, bonded fiber matrix, or rolled erosion control product on the slopes of any berms and on all cut or fill slopes along the edges of the property. In addition, vegetation and if necessary a turf reinforcement mat would be used along any drainage swales throughout the property that would direct the surface storm water flow to the detention pond. The detention pond would be located in the southwest corner of the project site (see Figure 4-2). In addition, disturbed areas that are not paved or graveled would be seeded with appropriate vegetation within 30 days of final grading.

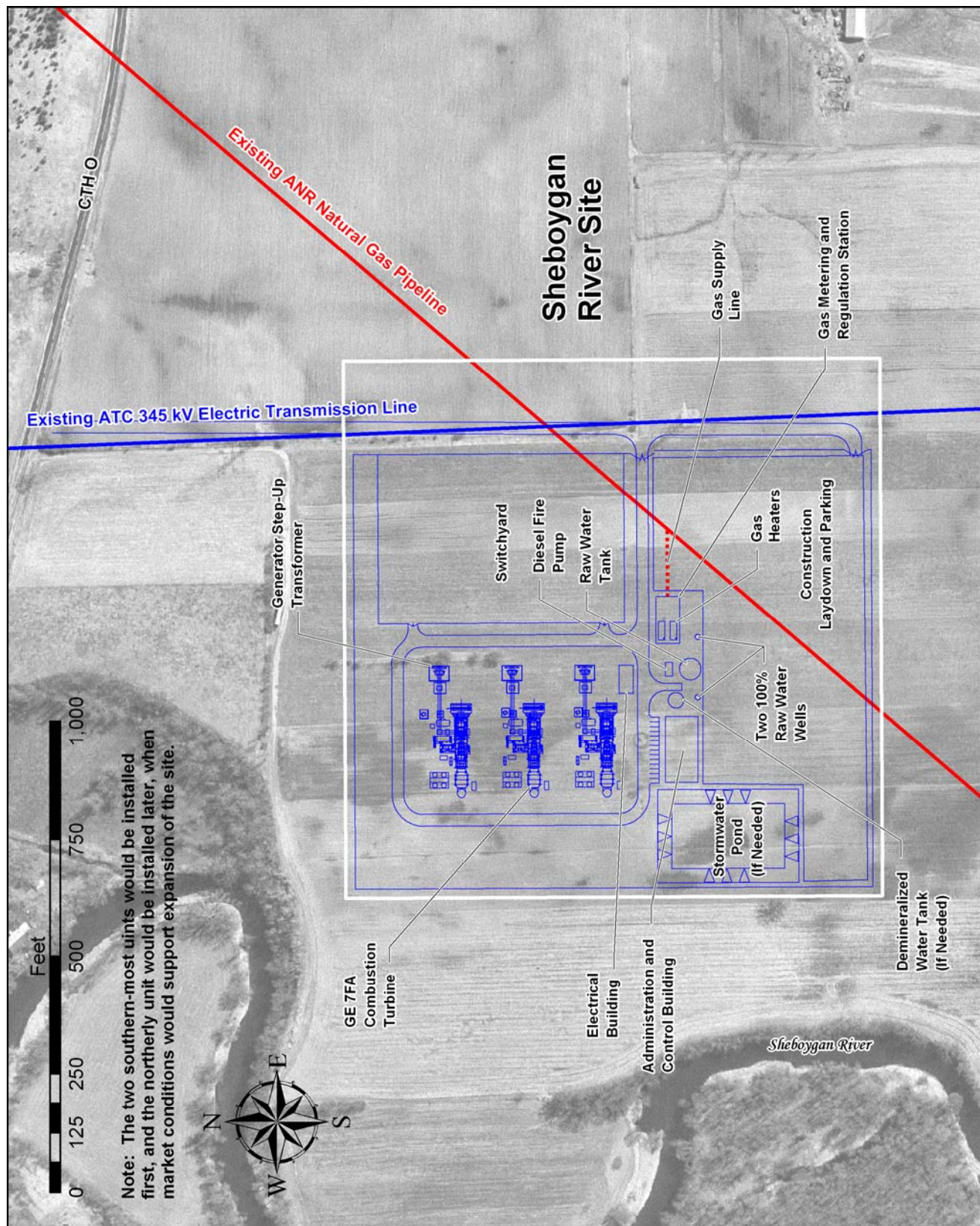
Sediment control devices would include sediment (silt) fence on the down hill side along the contour of any area that would drain overland runoff from the construction site onto adjoining properties or surface waters. A series of vegetated drainage swales would be constructed to carry the storm water runoff to a detention pond located at the northeast corner of the site. If necessary, there would be check dams placed at designed distances within the drainage swales for additional flow velocity reduction and sediment trapping efficiency before the storm water flow reaches the pond.

The storm water flow through the construction site would be managed with a series of vegetated drainage swales that would be sized to capture a minimum of a 10-year/24-hour storm event and a detention pond that would limit the discharge flow rate to the same as preconstruction conditions for the 100-year storm event. If necessary a series of check dams may be used in the swales to reduce flow velocity. These check dams would increase the runoff storage capacity and reduce runoff volumes due to an increase in infiltration behind the dams.

The DNR has reviewed the construction site SWPPP for the Highway 23 Site. With modifications, the SWPPP could be successfully implemented for the Sheboygan River Site. The storm water detention pond design would insure that during storm events, no increase in stream bank erosion or flooding in the project area would occur. The pond would have a permanent wet pool which would provide water quality benefits by settling out suspended solids before discharging. The permanent wet pool and plan design should provide sufficient protection of water quality in and around the project. For this site, the proximity of the Sheboygan River is a primary concern. The project site is 200 to 300 feet from the Sheboygan River on the northwest and southwest sides of the proposed project boundary. Any construction site SWPPP must include adequate designs to restrict and control runoff from the site to the nearby river. With proper design, discharge from the site should not negatively affect receiving waters.



Figure 4-2 Sheboygan River Site plant layout



## **Post-construction (operational) stormwater management and erosion control**

The DNR is responsible for oversight and regulation of the post-construction (operational) storm water management at the proposed facility. An SWPPP must be designed to achieve an 80 percent reduction of the sediment load that would be discharged from the proposed facility if no sediment or erosion controls were in place. The storm water detention and discharge system created for the construction phase of the project would remain in place and serve as the operational storm water and erosion control system for the facility.

The proposed post-construction storm water management plan would include a wet detention basin that incorporates water quality and water quantity. The pond has been designed to maintain the predevelopment 2-year/2-hour and 100-year/24-hour storm event peak flow rates. Maintaining the 2-year/24-hour peak flow rates should not increase stream bank erosion at the Sheboygan River, and maintaining the 100-year/24-hour flood event flow rates would not increase flooding. The pond would have a permanent wet pool, which would provide water quality benefits by settling out suspended solids before discharging. The permanent wet pool should provide sufficient sediment removal to prevent negative impacts to the River.

Additionally, secondary containment for equipment and facilities that contain petroleum products would be provided as required by federal and state laws including 40 CFR Part 112 Oil Pollution Prevention and Commerce Chapter 10 requirements. Secondary containment areas would be visually inspected. If an oil sheen is present, the contaminated storm water would be routed to an oil/water separator prior to discharge. If no sheen is present, the storm water would be released to grade and would flow through the drainage swales and eventually to the detention pond.

The system design proposed by PVG is adequate to protect the surface waters of the state for the Highway 23 Site. For the Sheboygan River Site, some modifications would most likely be required after a review and approval by DNR. There is no reason to believe that this project site would not be permitable.

## **Wastewater operational impacts**

Wastewater from the plant would consist of miscellaneous service water collected in floor drains, off-line turbine wash water, and sanitary wastewater. PVG proposes to use an inlet cooling technology known as evaporative cooling. Some water discharge from this system would be necessary in order to limit contaminant concentrations. Total daily plant process wastewater discharge is not expected to exceed 29,040 gallons. Waste service-water, an estimated 115,200 gallons per year, would be collected in plant drains and routed to an oil-water separator. Water from on-line turbine washing would be evaporated in the turbine and incorporated into the plant exhaust. Wastewater discharge from off-line turbine washing is estimated at 36,000 gallons per year. Plant staff members are estimated to generate 21,600 gallons per year of sanitary wastewater. Total annual wastewater production from the plant is estimated at 3,657,600 gallons at an average rate of approximately 30,480 gallons per day.

Federal, 40 CFR Part 423, and state (Wis. Admin. Code ch. NR 290) regulations establish effluent limitations. WPDES wastewater discharge permit would limit the concentrations of potentially harmful constituents, and would include all the requirements of the federal and state regulations. Parameters typically are suspended solids, oil and grease, pH, and various metals. By meeting both federal and state water quality standards, adverse impacts to aquatic life would not be expected from the discharge of treated wastewater. WPDES permits are not needed to begin construction. The need for WPDES

permits would be determined prior to the facility discharging effluent. Sanitary water would be diverted to a sanitary septic system similar to septic systems used in the immediate area.

## **Wetlands**

Based on DNR's Wisconsin Wetland Inventory, there are no wetlands within the Sheboygan River Site boundaries. Impacts to surrounding wetlands could result from soil erosion during construction. PVG has prepared a storm water and erosion control plan that utilizes DNR's Best Management Practices for Construction Sites. If this plan is implemented, impacts to surrounding wetlands from construction on this site would be unlikely.

## **Floodplain**

Based on Federal Emergency Management Agency (FEMA) flood insurance maps the Sheboygan River Site is not within the 100-year floodplain.

## **Wildlife**

### **Expected wildlife impact**

The Sheboygan River Site has been in agricultural development for decades. Wildlife species found in agricultural landscapes are usually species that thrive in disturbed habitats. Wisconsin species typically found in disturbed habitats include white-tailed deer, raccoon, opossum, rock dove, and a variety of sparrows and finches. The proposed project would reduce the available habitat in the area for these species by about 11 acres. However, this habitat type is abundant in the project area and the wildlife species likely to be using this area are abundant as well. No significant impact to wildlife or their habitats is expected as a result of this project.

### **Endangered and threatened species**

A review of the Natural Heritage Inventory database found no known occurrences of endangered, threatened, or special concern species or plant communities on the proposed project site. It is possible that an endangered or threatened species could be encountered during construction at the Sheboygan River Site. However, because this site has been under agricultural development for a considerable period of time, this is highly unlikely.

The threatened pitcher's thistle (*Cirsium pitcheri*) is the only federally listed species known to occur in Sheboygan County. This species typically inhabits stabilized dunes and blowout areas. Neither habitat type is present on the proposed site and no occurrence of the pitcher's thistle has been recorded in the project area. No impact to this species is anticipated.

## **Agriculture**

This site currently has about 30 acres in cropland that would be directly affected by the project. The entire facility would require a little over 11 acres. This includes about 6.3 acres for the power plant and an additional 5 acres for the switchyard and transmission interconnection. Roughly 18.7 acres would be open space. The proposed facility would permanently remove approximately 30 acres of agricultural land from production. Removal of 30 acres from agricultural production in this area of the state would not be considered a significant or serious reduction in farmlands. The overall impact to agriculture would be small.



## **Local Community**

### **Site history**

The Sheboygan River Site has been in agricultural production for some time. There is no history of any other use.

### **Land use**

The Sheboygan River Site is currently zoned A-1 or Exclusive Agricultural Use.

### **Changes in land use due to proposal**

This site would require a zoning change and a Conditional Use Permit from the town of Sheboygan Falls. No zoning changes have been proposed to the town of Sheboygan Falls for the Sheboygan River Site at this time.

This area of Sheboygan Falls Township is somewhat removed from Highway 23 where some planned rezoning and development is occurring. The nature of the landscape is primarily rural.

### **Proximity to residences**

There are 17 residences and one business establishment within one-half mile of the proposed Sheboygan River Site. Six residences are within one-quarter mile of the proposed project boundary. The closest homes are to the east and north of this site.

### **Population in the general project area**

The 2002 population estimate for Sheboygan County is approximately 112,480. The county ranks 12th among Wisconsin counties in terms of population. The population is approximately 93 percent Caucasian, 1.1 percent Black, 3.3 percent Asian, and 0.4 percent Native American. The population in the town of Sheboygan falls is 98 percent Caucasian. There are no minority households within one-half mile of the Sheboygan River Site.

The median household income for the county is \$46,237. About 7.2 percent of families with children under five years old are considered to be living below the poverty level. The median income in the town of Sheboygan Falls is slightly higher than the county median. Median income within one-half mile of the Sheboygan River Site is reported by PVG to be approximately \$59,107, which is significantly higher than the township or the county. Production, transportation, and material moving account for about 30 percent of the jobs in the county. Farming, fishing, and forestry occupations account for about 1 percent of employment. Manufacturing is the primary industry in Sheboygan County.<sup>9</sup>

### **Proximity to schools, hospitals, nursing homes, daycare centers**

No schools, daycare facilities, hospitals, and nursing homes are found within one-half mile of the proposed facility.

### **Public land**

There are no states or federally owned wildlife or natural areas located on or near the proposed Sheboygan River Site.

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<sup>9</sup> Wisconsin Department of Administration; U.S. 2000 census

## **Local community services**

In general, the proposed project is a relatively self-contained facility and would not have a significant impact on municipal services or infrastructure.

## **Fire protection and emergency services**

The town of Sheboygan Falls Fire Department would provide the Facility with fire protection and rescue services during the construction and operation of the plant. The Fire Department serves the town of Sheboygan Falls, the Sheboygan County Memorial Airport and parts of the town of Lima. The Fire Department has one station that protects a mostly rural area of 43 square miles. The department is a public department whose members are volunteers. The station is located at N5480 County Road TT.

Fire protection services from the Town fire department would be required during construction.

The proposed facility would be designed to be self-sufficient for fire protection in accordance with National Fire Protection Association (NFPA) standards. The combustion turbines would have independent fire detection and suppression systems. A fire loop and hydrants would be installed on-site which are fed from the raw water storage tank and fire pump. A minimum amount of water would be maintained in the tank at all times for fire protection service. A backup diesel fire pump would be installed in the event that electrical service to the primary pump is lost. Electrical transformers would be spaced in accordance with NFPA standards.

While the applicant would coordinate emergency response with the local fire authorities, once the fire suppression system is operational, the facility would be most likely not require assistance in the event of fire. Fire danger from the facility would also be limited because there would be no on-site fuel storage. In addition, the facility would store very limited quantities of potentially hazardous materials on site. As a result, the proposed power plant is expected to have minimal impact to the Sheboygan Falls Fire Department. Emergency services other than fire protection would still fall on the local fire and police department.

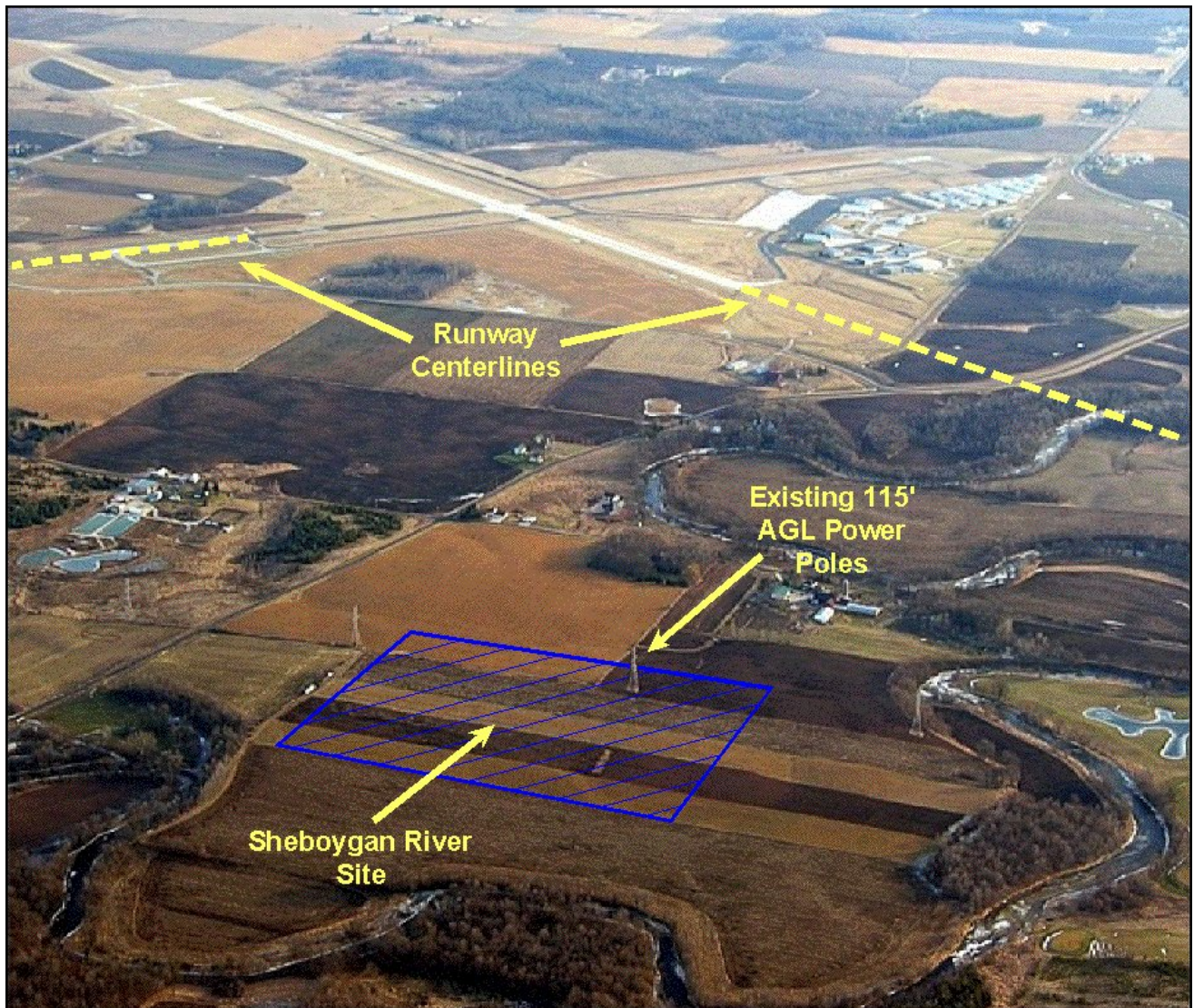
The applicant has proposed to make water stored in its raw water storage tank available to the local fire department in case of an extreme fire emergency.

## **Sheboygan County Memorial Airport**

The Sheboygan County Memorial Airport is located approximately one mile northeast of the Sheboygan River Site. However, the airport has a runway extension planned for the near future which would extend the runway about 600 feet to the southwest and thus slightly closer to the Sheboygan River Site. There are two common concerns for aircraft safety when power plants are built near airports. One concern is the potential that tall structures at the facility might constitute an obstruction to aircraft. A second concern is for the possibility that air turbulence created by the plant's exhaust stacks might endanger aircraft during landing and takeoff. Both the Wisconsin Department of Transportation (DOT) Bureau of Aeronautics and the FAA review projects where aircraft safety may be a concern.

In this case, the runway alignment in relation to the Sheboygan River Site is such that problems with aircraft are unlikely (see Figure 4-3). In addition, a high-voltage transmission line is located between the site and the airport. Because the transmission structures are taller than any part of the proposed power plant, the power line becomes the controlling object for aircraft safety. The DOT Bureau of Aeronautics has determined that this site does not constitute a threat to aircraft safety.

Figure 4-3 Sheboygan River Site and Sheboygan County Memorial Airport



## Hazardous waste

### During construction

Table 4-1 Expected chemical and material usage during construction

Material/Chemical	Purpose	Storage Method
Diesel Fuel	Equipment Fuel	Aboveground, truck-mounted tank
Gasoline	Vehicle Fuel	Aboveground, truck-mounted tank
Medium and Heavy Weight Oil	Equipment Lubrication	55-gallon drums
Waste Oil	Waste from Equipment Lubrication	55-gallon drums
Light Lubrication Oil	Small Equipment Lubrication	5-gallon containers
Solvents	Cleaning Equipment	1-gallon containers
Paint	Prime and Finish Painting	55-gallon drums/5 gallon containers

Chemicals such as diesel fuel, gasoline and lubrication oil would be used for the operation and maintenance of construction equipment. Other chemicals such as solvents and paints may be needed at various times during construction.

Diesel and gasoline fuel would likely be temporarily stored on site during construction activities in tanks within above ground containment areas. Containment areas would consist of dikes or truck-mounted tanks that are capable of holding at least 110 percent of the storage tanks' capacity in the event of a leak. Maintenance trucks would likely fuel construction equipment. The construction superintendent would be responsible for reporting spills and overseeing the cleanup and disposal of any affected soil and spill clean-up materials. Minor spills of fuel or other chemicals would be cleaned with absorbent pads or other manufactured absorbent products stored on the maintenance truck or in a marked cabinet that is readily accessible. Larger-quantity spills are not expected to exceed the capacity of a 55-gallon drum and would be removed from within the containment area using a vacuum tank truck or pumped into a suitable container. Soil or absorbent materials that have come in contact with fuel or chemicals would be immediately removed, stored, and disposed of in accordance with state regulations. The equipment would be kept in good working condition so that the potential for transmission, hydraulic, or brake fluid leaks can be minimized. The chemical storage areas would include hose stations, spill kits, safety showers, eye wash stations, and first aid kits.

Procedures for the proper storage of hazardous materials and spill containment and cleanup have been well developed for industrial sites. The following procedures should be implemented to insure protection of the surrounding environment.

### **Storage**

- All hazardous materials should have proper labels and identification.
- Hazardous materials should be stored on a slab with a sand berm or engineered prefabricated containment to prevent and control spills.
- Keep Material Safety Data Sheets on file and available to all employees and contractors.

In the event of a spill, the following corrective actions should be taken:

- Absorb with sand or other sorbent, and contain as quickly as possible.
- Place sorbent in suitable container(s) for disposal.
- Notify licensed landfill or hazardous waste transportation and disposal company of intent to dispose.
- Notify the DNR, and other regulatory agencies as required.
- Note exposure to ground or surface water, and take steps to minimize impacts.

### **During operation**

The proposed power plant would generate less than 100 kilograms per month of hazardous waste. The power plant would therefore qualify as a Conditionally Exempt Small Quantity Generator of hazardous waste.

The Facility may generate small quantities of wastes such as used solvents/paints or used oil that are regulated as hazardous waste in accordance with the EPA's Resource Conservation and Recovery Act (RCRA) regulations. PVG would ensure that all wastes are appropriately handled on site and disposed



of at a facility properly licensed under RCRA and are hauled to that disposal site by a licensed transportation firm. A list of material used during power plant operation is given in Table 4-2 below

**Table 4-2 Expected chemical and material usage during operation**

Material/Chemical	Purpose	Storage Method
Natural Gas	Fuel	None
Generator Lube Oil	Lubrication	55-gallon drum
Combustion Turbine Lube Oil	Lubrication	55-gallon drum
Cleaning Detergent	Combustion turbine blade water washes	Wash water skid tank
Sulfuric Acid (93%)	pH control and neutralize chemical spills	55-gallon drum
Sodium Hydroxide (50%)	Neutralize chemical spills	55-gallon drum

## Roads

### Existing roads

The Sheboygan River Site is approximately 800 feet south of County O and 1,100 feet west of Alpine Road.

### Access road

County Road O, Highway 23, and Alpine Road would be the primary access roads for the project. Highway 23 is located approximately one-half mile south of the site. A 30- to 40-foot wide access road would be built from County Road O south to the plant site to provide truck and equipment access during construction. The new access road would be about 800 feet long and would connect to the east side of the site adjacent to the existing transmission line. The new access road would be paved and constructed at grade so as not to obstruct farm access to adjacent fields. PVG does not have an agreement for purchase of the land for the road nor does PVG have an option for that property.

## Traffic

### Construction traffic

Some heavy equipment would be delivered to a rail spur in the Sheboygan/Sheboygan Falls area. From the rail spur, heavy equipment would most likely be transported to the site by truck via Interstate 43, Highways 23 and 32, and County Road O. Heavy haul dates and routes would be coordinated with the appropriate local and state agencies.

Approximately 10 heavy equipment deliveries are expected for the power block. Approximately 1,100 truck deliveries, excluding heavy equipment, are expected throughout the 12-month construction period. The frequency of truck deliveries would be the highest during the early stages of construction when concrete is being delivered. The number of deliveries would decrease as construction progresses. The majority of the truck deliveries are expected to be via Highway 23. At peak construction, up to 120 personal vehicles would be expected to enter and leave the plant site daily based on an estimated average vehicle occupancy (AVO) of 1.3. During non-peak construction periods, approximately 60 personal vehicles would be expected to enter and leave the site each day. The owner intends to work with local government officials to develop a mutually acceptable traffic plan to accommodate the additional construction traffic. On-site construction parking would be provided at the site.

## **Impacts to roads and local traffic patterns**

Traffic along County O, Highway 23, and Alpine Road would be expected to increase, coinciding with the arrival and departure of construction workers and the delivery of equipment and supplies to the site. Highway 23 traffic is normally moderate. During the construction period there would be an increase in local traffic patterns and density. Increased traffic would consist of both small private vehicles and large trucks and construction transports. There may be periods of traffic congestion as heavy equipment and trucks move in and out of the site. Large equipment components would be delivered by rail and loaded on a lowboy transporter. The transporter would be pulled by truck to the plant construction site. Arrangements would be made as necessary with local units of government to arrange for any additional traffic control. Damage to local roads is not expected, but in the event that damage does occur, PVG would repair the damage.

## **Traffic during operation**

When the plant is fully commercial, there would be private vehicle traffic from approximately six to eight employees. Truck deliveries during operation of the plant would include trash pickup, general supplies, replacement parts, lubricants and other consumables. The applicant expects that the facility would not need to use demineralized water during operation. The water quality at the site is adequate for use in the evaporative coolers with cycling of the water at two times without treatment. However, if scaling does begin to present an operational issue over time, a portable softening system may be used to treat a portion of the groundwater. By using a 50/50 percent blend of treated and raw water, it is estimated that the facility might require water conditioning at a rate of once every two weeks. The softening process would require one semi-trailer visit every two weeks to treat water. Based on current estimates, the traffic during plant operation would be limited and is not expected to significantly impact traffic flow.

Due to the limited volume of additional traffic that would be generated during operation of the plant, there are no permanent changes expected to existing roads or traffic signals. PVG would develop one entrance on County O for truck traffic, employees and craft labor.

## **Fogging and icing**

The proposed project would be a simple-cycle combustion turbine power plant. The facility would not utilize cooling towers, and as a result, no cooling tower fogging, icing, or visible plumes would occur.

## **Noise**

### **Terminology and measurements**

Everyday sounds are comprised of sound waves of many different frequencies. The frequency of a sound wave is measured in Hz, with one Hz equal to one sound wave cycle per second. While the frequency range of human hearing is generally accepted to be 20 to 20,000 Hz, the ear is not equally sensitive to sounds through that entire range.

Sound levels are measured with a device called a sound level meter in units known as decibels (dB).

When sound level measurements are taken, it is customary to use weighting systems in conjunction with the sound level meter to approximate the frequency sensitivity of human hearing. Three internationally standardized weighting characteristic curves exist for sound measurements: characteristic A for sound levels below about 55 dB, characteristic B for sound levels between about 55 and 85 dB, and

characteristic C for sound levels above about 85 dB. When sound levels are measured using a weighting characteristic, the measurements are designated by adding the characteristic curve letter after the abbreviation for decibels, such as 58 dBA.

The existing noise environment at the proposed sites and anticipated noise from the proposed facility has been analyzed in terms of A-weighted (dBA) and C-weighted (dBC) sound scales and an examination of the variation among frequency bands from 16 Hz to 8,000 Hz. The dBA scale enables an estimate of the noise that people would hear. The dBC scale enables an estimate of low-frequency noise that people might hear or feel. The frequency band analyses might reveal whether certain types of noise are prominent and need to be controlled in certain ways.

Noise level scales (as measured in decibels (dB)) are logarithmic rather than linear. This means that the decibel levels emitted by two different noise sources cannot simply be added together to determine the combined effect of those noise sources. As a generally accepted rule of thumb, two noise sources emitting sound at the same dB level would have a combined noise impact of 3 dB greater than either source alone. The same rule can be applied to weighted sound levels as well.

As a point of reference, sound experts generally agree that the human ear can detect changes in dBA roughly as follows:

- A change of 3 dBA or less is barely perceptible.
- A change of 5 dBA is perceptible.
- A change of 10 dBA is perceived as either twice or half as loud.

Noise also decreases with distance from the source. Assuming there are no obstructions between the noise source and receptor, the noise from a single source decreases by approximately 6 dBA for every doubling of the distance. For a noise source that is a continuous line, such as a highway, the noise levels will generally decrease by about 3 dBA with a doubling of the distance from the source<sup>10</sup>. In addition to distance, noise levels can be affected by intervening structures or objects such as buildings, trees, and shrubs.

### **Applicable local ordinances**

There are no noise ordinances for the town of Sheboygan Falls or Sheboygan County. The town of Sheboygan Falls has a Public Nuisance ordinance that addresses loud noises. Section 5.05 (d) 10 Public Nuisance states that a nuisance consists of “All loud, discordant and unnecessary noises or vibrations of any kind.” Nuisances are prohibited. This section does not establish decibel levels that are considered unacceptable.

### **Existing noise environment**

In accordance with the PSC’s Noise Assessment Measurement Protocol, an ambient noise level survey was conducted in the project area on January 8 and 9, 2003. Sound level measurements were collected to establish background sound levels prior to construction and operation of the proposed project. Sound level readings were recorded over 10 minute periods during morning (6:00 – 8:00 a.m.), midday (12 noon – 2 p.m.), evening (6:00 – 8:00 p.m.) and late night hours (10 p.m. – 12 Midnight) at locations MP1, MP2, MP3, and E1 (see Figure 4-4).

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<sup>10</sup> B. B. Marriott, Practical Guide to Environmental Impact Assessment.

Octave band ( $L_n$ ) unweighted sound levels were measured, in addition to A-Weighted and C-Weighted decibel levels. Observations of predominant noise sources and weather conditions were also noted.

Weather conditions during the surveys were favorable for noise studies. Temperatures ranged from 36° to 55°F, and wind speeds averaged between 5 and 10 mph. Ambient noise sources during the survey of the Sheboygan River Site were dominated by noise from car and truck traffic. Table 4-3 shows some of the ambient sound measurements taken around the Sheboygan River Site. The table lists the  $L_{eq}$  (equivalent continuous sound level—a measure of average energy representing the steady state noise level during the measurement period) reported in both dBA and dBC, and the  $L_{10}$  and  $L_{90}$  (sound levels exceeded 10 percent and 90 percent of the time during the measurement period), all reported in dBA.

Background ambient sound levels ( $L_{90}$ ) appear to be primarily influenced by local traffic. These background noise levels typically ranged from about 31 to 39 dBA (see Table 4-3). The equivalent continuous sound level ( $L_{eq}$ ) measured between 49 and 68 dBA. When using the C weighting, the  $L_{eq}$  ranged from 65 to 83 dBC. The higher dBC levels indicate a relatively high component of low frequency sounds in the ambient environment. As with the Highway 23 Site, traffic noise appears to be the source of low frequency sound in the area immediately surrounding the Sheboygan River Site.

**Table 4-3 Ambient sound measurements around the Sheboygan River Site - measurements were taken on January 8 and 9, 2003**

Measurement Point	Time	$L_{eq}$ (dBA)	$L_{eq}$ (dBC)	$L_{10}$ (dBA)	$L_{90}$ (dBA)
MP1	6-8 AM	68	77	57	36
MP1	Noon-2 PM	63	72	54	35
MP1	6-8 PM	57	74	50	39
MP1	10 PM-12 AM	53	76	49	37
MP2	6-8 AM	65	73	55	35
MP2	Noon-2 PM	57	76	48	38
MP2	6-8 PM	57	75	44	37
MP2	10 PM-12 AM	53	72	42	37
MP3	6-8 AM	57	65	42	31
MP3	Noon-2 PM	56	69	46	33
MP3	6-8 PM	55	75	42	34
MP3	10 PM-12 AM	51	83	47	37
E1	6-8 AM	58	68	54	37
E1	Noon-2 PM	57	70	52	39
E1	6-8 PM	53	70	61	39
E1	10 PM-12 AM	49	73	46	37

## Construction noise impacts

### Individual equipment noise

Construction noise would come from a series of intermittent sources, most of which would be diesel engine drive systems that power most construction equipment. It is likely that during peak construction, construction work would continue for 10 to 16 hours per day. Typical construction noises, modeled for a similar power plant project in southeastern Wisconsin, are illustrated in Table 4-4. Some noises during construction could be very loud (ranging from 120-134 dBA at 50 feet from the event) occurring during short-term steam or air blows in the final stages of plant installation.



**Table 4-4 Estimated maximum noise levels for typical construction equipment (dBA)**

Construction Equipment	Maximum Noise Level (dBA) Typical Range = 50 Feet from Source
Steam blow off (4-8-inch line)	124-134
Air blow off (4-8-inch line)	120-130
Blasting	93-94
Dozer (250-700 horsepower)	85-90
Front end loader (6-15 cubic yards)	86-90
Trucks (200-400 horsepower)	84-87
Grader (13-16-foot blade)	83-86
Shovels (2-5 cubic yards)	82-86
Portable generators (50-200 kW)	81-87
Derrick crane (11-20 tons)	82-83
Mobile cranes (11-20 tons)	82-83
Concrete pumps (3-150 cubic yards)	78-84
Tractor (3/4 to 2 cubic yards)	77-82
Unquieted paving breaker	75-85
Quietened paving breaker	69-77

### Comparison of equipment noise with the measured $L_{10}$ s

The noise from construction operations might be compared with the  $L_{10}$  statistic from the ambient sound measurements listed previously. This statistical parameter is intended to quantify the sound level that is exceeded 10 percent of the time and is an indication of the maximum noise levels reached in the ambient environment. In this case, sources for  $L_{10}$  are most likely from traffic noise. A comparison with the  $L_{10}$  values in Table 4-3 shows that every piece of construction equipment on the construction site listed in Table 4-4 could have the potential to be louder and more distracting at 50 feet than local ambient sources.

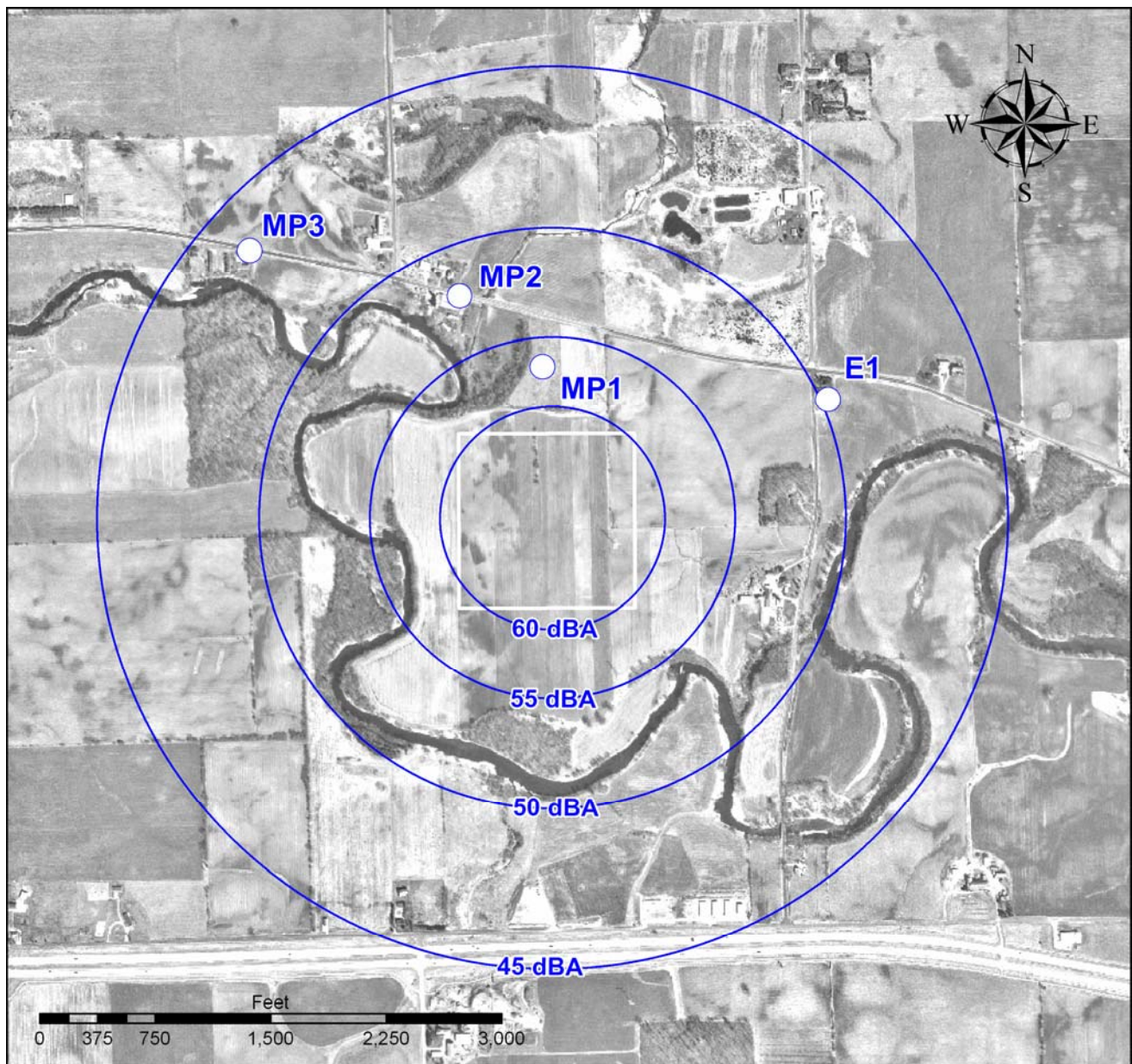
Noise could be reduced by keeping all diesel engine mufflers in good working order, and timing most noise for daytime or first-shift periods to the extent possible. The steam and air blows could be limited to daytime hours with some sort of notification.

### Operation impacts and mitigation

#### Estimated noise impact of project

Consultants for PVG used a three-dimensional acoustical model to predict noise levels at off site residences near the proposed site. Estimated turbine sound power levels were obtained from the equipment manufacturer. The estimate of the proposed facility's noise emissions were based on a standard equipment configuration that includes noise mitigation measures that include air inlet silencing, exhaust silencing, and an acoustical enclosure for the combustion turbine unit. Figure 4-4 shows the sound level contour that would result when the proposed plant is running at the Sheboygan River Site. The sound level contour includes only the noise from the proposed plant and does not include existing ambient sound levels.

Figure 4-4 Sheboygan River Site projected sound level contours during plant operation



### Low frequency sound and vibration

Low frequency noise and vibration have been identified in some Wisconsin combustion turbine plants. It is felt as a vibration or rattling of structures or objects and is not clearly identifiable when measuring or estimating sound using the A-weighted decibel scale. It is customary to take noise measurements using the A-weighted scale to approximate the sensitivity of the human ear across the frequency range of human hearing. However, because the C-weighted scale measures more of the low-frequency sounds, it can give a better indication of the potential for low-frequency vibration. Airborne sound waves in the frequency range below 40 Hz, if high enough in magnitude and energy, can couple with frame building walls and windows and cause vibration. Studies provided by PVG indicate that the low

frequency sound levels originating from the proposed power plant would not cause noticeable vibrations in walls and windows of nearby buildings.

Simple-cycle combustion turbines, like the one proposed in this project, discharge their exhaust gases directly to the atmosphere through exhaust silencers, which do not silence well below 40 Hz. Most large combustion turbines create very high levels of acoustic energy below 40 Hz, and this energy can radiate as airborne sound waves and easily propagate over large distances. For the GE model PG 7231(FA), the turbine exhaust would be the loudest low frequency sound source.

### Expected noise impact

The estimated noise emissions for the proposed power plant have been compared to the existing ambient noise environment. An analysis was conducted to estimate the changes in the ambient noise level in and around the proposed facility. Estimates were based on three turbines running simultaneously. Table 4-5 shows the measured ambient Leq in both dBA and dBC and the expected increase in noise levels at each measurement point. The analysis indicates that the proposed plant would slightly increase the noise levels at measurement point E1, which is located near the intersection of County O and Alpine Road. The expected increase ranges between 2 and 3 dBA and between 0 and 1 dBC. These increases are relatively small. The human ear is barely able to detect changes of 3 dB or

Measurement Point	Time	Measured Ambient (Leq, dBA)	Projected increase in Ambient (dBA)	Measured Ambient (Leq, dBC)	Projected increase in Ambient (dBC)
MP1	6-8 AM	68	0	77	0
MP1	Noon-2 PM	63	0	72	0
MP1	6-8 PM	57	1	73	1
MP1	10 PM-12 AM	53	2	75	0
MP2	6-8 AM	65	0	73	0
MP2	Noon-2 PM	57	0	76	0
MP2	6-8 PM	57	0	75	0
MP2	10 PM-12 AM	53	1	71	1
MP3	6-8 AM	57	0	65	1
MP3	Noon-2 PM	56	0	69	0
MP3	6-8 PM	55	0	74	0
MP3	10 PM-12 AM	51	1	82	0
E1	6-8 AM	58	1	67	1
E1	Noon-2 PM	57	1	70	1
E1	6-8 PM	53	2	74	0
E1	10 PM-12 AM	49	3	72	1

less. Changes expected at the remaining measurement points range between 0 and 2 dBA.

**Table 4-5 Projected noise impact at sensitive receptors near the Sheboygan River Site**

The turbine exhaust stacks would be the primary noise sources on site. This type of noise source tends to have a fairly high low frequency component. However, the existing sources of ambient noise also account for a fairly significant contribution from low frequency sources. Traffic noise near the Sheboygan River Site appears to be the main contributor of low frequency noise in the area. This project is not expected to impact the local noise environment in any significant way. Projected increases to the surrounding environment are small and are not likely to be readily obvious at nearby residences.

Road traffic associated with the facility would be limited to operating personnel and supply or maintenance trucks that would enter the site on an infrequent basis. The project is not expected to significantly increase local traffic noise after the construction phase is complete.

In order to insure that all efforts are made to reduce noise from the proposed facility, a Commission order approving the project could include requirements that all proposed noise attenuation methods be installed and maintained and that actual noise levels not exceed predicted values. In addition, a Commission order could also require a post construction noise analysis to determine if the projected noise created by the plant meets the estimates reported in this EIS.

## **Electromagnetic fields (EMF)**

Concerns over exposure to EMF are often raised during power plant and transmission line construction cases. Electric and magnetic fields occur whenever and wherever we use electricity. A magnetic field is created when electric current flows through any conductor such as a power line or the electrical wiring in a home. Other sources of magnetic fields include electric blankets, fluorescent lights, appliances, and electric baseboard heating. Because there are so many common sources of EMF, we are exposed to a wide variety of magnetic fields every day. Magnetic fields are measured or estimated in units of Gauss or milligauss (mG) (a milligauss is equal to 1/1000<sup>th</sup> of a Gauss). Measurements of power line EMF are always reported in mG.

Scientists have found only weak and inconsistent epidemiological associations between exposure to power frequency EMF and human health. Several epidemiological studies have shown a statistical association between the risk of childhood leukemia and the kind of electric wires outside the home. However, many epidemiological studies have found no link to leukemia. Cellular studies and studies exposing test animals to EMF have shown no link between EMF and disease. Taken as a whole, the biological studies conducted over the last 25 years have not been able to establish a cause-and-effect relationship between exposure to EMF and human health effects. In addition, there have been no plausible biological mechanisms discovered by which exposure to power frequency EMF might cause human disease.

There may be some circumstances where exposure to the electric field produced by a line may result in inappropriate pacing for pacemakers or inappropriate operation of defibrillators.

For more information on EMF and human health you may wish to obtain a free publication produced by the Public Service Commission of Wisconsin entitled “EMF – Electric & Magnetic Fields.” This publication is also available on the PSCW web site at <http://www.psc.wi.gov>.

The power plant itself would not contribute directly to changes in EMF outside the plant boundaries. EMF created in power plants and substations, unlike those created by power lines, are extremely complex. Because of that complexity, even though power plant EMFs may be relatively high near the source, they break down quickly over a relatively short distance. Homes in the area would not experience changes in EMF levels as a direct result of plant operations.

## **Visual landscape**

### **Existing landscape**

The Sheboygan River Site is located largely in a farming landscape. The site is flat, relatively open and situated near the Sheboygan River. The site is set back about 800 feet south of County O and about

1,100 feet west of Alpine Road. A power plant at this site would be less visible from local roads than the Highway 23 Site. While the aesthetic impact may be argued to be less because of reduced visibility from roads, it is also true that the immediate surrounding environment has no existing commercial or industrial development. The landscape is dominated to the west by the Sheboygan River and forested properties immediately adjacent to the river. To the east the area is dominated by row crop agriculture. A power plant at this site would have a greater aesthetic impact than would a similar development at the Highway 23 Site which is in an area with some existing commercial development and is adjacent to a 4-lane highway.

### **Prominent plant features**

The most prominent features of the proposed plant would be the 75-foot exhaust stacks and the electric substation. Plant equipment would be visible from residences north and east of the project. Also, some residences along County O may have a clear and unobstructed view of the new facility.

### **Planned new external lighting**

Site lighting requirements may be greater during the construction period than for the completed plant. The construction lighting impact would be temporary. However, the site would be permanently lighted for security and operational purposes. PVG's lighting plans include non-glare, high cutoff fixtures. These fixtures are designed to focus light downward and where possible would be directed to entryways, walkways, or equipment requiring illumination. Trespass lighting would be minimized as much as possible. The high cutoff fixtures would, to some extent, reduce nighttime lighting impacts. Because this site is somewhat removed from the normal flight path of aircraft using the Sheboygan County Memorial Airport, aircraft warning lights on the plants stacks are unlikely to require by the FAA.

### **Mitigation of aesthetic impact**

Impacts to the aesthetic quality of the area can be reduced by creating a landscape barrier between the facility and sensitive receptors. Views from residences to the east can be improved by the construction of sight screening berms and plantings such as trees and shrubs. The use of limited and focused lighting would, to some extent, reduce nighttime visual impacts.

## **Historical and archeological sites**

### **Known and listed historic properties**

Under Wis. Stat. § 44.40, the Commission must determine if project construction and operation could affect historic properties listed with the WHS. The listings at the WHS show no traditional cultural, archeological, or historic architectural properties on the Sheboygan River Site. The applicant conducted a survey of the Sheboygan River Site on October 26, 2001. Standard field procedures were used to locate and evaluate cultural resources that may be present in the project areas. Survey results concluded that there were no archaeological resources located on the site that might be eligible for inclusion in the National Register of Historic Places. All known historic properties near the site are expected to be distant enough from the construction area that no adverse impacts would be expected from construction and operation of the facility.

### **Potential impacts**

In the event human remains or historic/prehistoric artifacts are found during construction, all construction activities must cease in the vicinity of the find and the SHPO would be notified. PVG would need to work with state authorities to coordinate protection and preservation of cultural resources.

## Local economics

### Shared revenue

The owners of power plants do not pay property tax but instead pay to the state a gross receipts tax. By law, the state then distributes shared revenue payments to local municipalities based on the plant's nameplate capacity. Tax distributions would be made to local government based on a rate of \$2,000 per MW of installed capacity. Additional payments may be made to local governments based on certain incentives identified in state statutes. These incentives are paid for:

- New baseload plants
- Power plants using alternative energy sources
- Cogeneration plants
- Power plants built on existing power plant or brownfield sites

The proposed project is not eligible for additional incentive payments.

Annual payments begin the year after the plant becomes operational and continue as long as the plant produces electricity. Payments are divided between the county and township with the county receiving two-thirds and the township one-third of the total formula amount. In this case, PVG would initially install two turbines. Using a nameplate rating of 177 MW per turbine, the initial installed capacity for the project would be approximately 354 MW. This would result in a total shared revenue payment of \$708,000 per year. Of this total, approximately \$467,280 per year would go to Sheboygan County and approximately \$240,720 per year would be paid to the town of Sheboygan Falls. Should the applicant install a third turbine, the payments to the county and township would increase accordingly. If approved, the first payments for this project would be made the year after the plant becomes operational. The present schedule would put the first payment to local government in 2006. The total dollar amount distributed is limited to the municipality's population multiplied by \$300 or the county's population multiplied by \$100. No payments would be distributed to the municipality or county during the construction phase of the project.

### Jobs

The proposed project would create both temporary and permanent employment. Construction is anticipated to take about 10 to 12 months. The project would require up to 150 construction employees at times of peak activity. The work force would include a number of skilled and professional workers, including civil, structural, and electrical engineers; electricians; instrument and control technicians; steam fitters; carpenters; and general construction workers. Some of these workers may come from the surrounding community.

Six to eight permanent employees would operate the proposed power plant. The employees may include technical professionals including an engineer or plant manager, supervisory staff, and skilled technicians and operators. The annual payroll would be approximately \$450,000.

## Electric Transmission System

### Transmission facilities required

The proposed facility would be connected to the state's transmission system through a 345 kV switchyard, which would be looped to the existing 345 kV transmission line located adjacent to the proposed site. If the project is approved, the new switchyard and connection to the transmission system

would be built by the American Transmission Company (ATC). The ATC will apply to the Commission for authority to construct the needed transmission facilities at a later date.

The switchyard would be located inside the proposed site (see Figure 4-2). The connections with the existing 345 kV line would also be built. All construction for the new interconnections would take place entirely within the ROW of the existing transmission line. At least two structures could be replaced along the existing transmission line corridor in order to re-route the existing circuit into the new switchyard. It is expected that no new ROW would be required.

### **Construction impact**

While no application for the transmission work has been filed with the Commission, additional long-term impacts associated with the construction of the transmission facilities are not expected. The switching station would be inside the proposed site boundary. New transmission structures would most likely be located inside the existing transmission line ROW. However, those structures may require concrete foundations. Two or three structures may need to be replaced. Impacts would be expected to be limited to short-term construction impacts. Access to the construction site and the addition of new turning structures would result in some impacts to the land within the existing ROW. Any area under cultivation within the existing ROW could be affected. Limiting construction to the winter can minimize impacts to existing crops. Farm operators are required to be compensated for any lost or damaged crops. Longer term impacts resulting from soil compaction can be mitigated by proper aeration of the soil once construction is complete.

Impacts to wildlife, endangered and threatened species and forest lands are not expected.

### **Transmission line EMF**

Magnetic field changes associated with the transmission system as a result of this project have not been modeled. Additional information about EMF would be provided in the ATC application for transmission facilities some time in the future.

### **Radio and television interference**

Power lines do not usually interfere with normal television and radio reception. In some cases, interference is possible at a location close to the ROW because the broadcast signal is weak or the receiving equipment is of a poorer quality. If interference occurs because of the power line the applicant would be required to remedy the problem so that reception is restored to its original quality.

### **Safety standards**

Transmission lines must meet the requirements of the Wisconsin State Electric Code. The code establishes design and operating standards, and sets minimum distances between wires, poles, the ground, and buildings. The code represents the minimum standards for safety.

Wis. Admin. Code ch. PSC 114.234 prohibits the construction of transmission lines over residential dwellings, swimming pools, wells, or above ground uncovered fuel storage tanks. Although they may not be prohibited by code, building other structures within a transmission ROW is strongly discouraged.

### **Natural gas pipeline**

The existing ANR pipeline that would be used to supply natural gas to the proposed plant passes through the Sheboygan River Site (see Figure 4-2). Connections to the ANR pipeline would be made

inside the plant boundary. All impacts from pipeline connections would be contained inside the site boundary and no new pipeline ROW would be required.



## CHAPTER

# 5

## Chapter 5 – Overview of the Proposed Project and Required Decisions

### **APPROVAL, DENIAL, OR MODIFICATION OF PROPOSED POWER PLANT**

The Commission has the obligation to approve, deny, or modify PVG’s proposal to build the power plant, and to issue an order to that effect with appropriate conditions added.

Wis. Stat. § 196.491(3) require the Commission to make the following determinations before approving construction of the PVG project as a wholesale merchant plant:

1. Under Wis. Stat. § 196.491(3)(d)(3), the plant must have a design and location that is in the public interest considering:
  - Alternative locations
  - Individual hardships
  - Safety
  - Reliability
  - Environmental factors
2. Under Wis. Stat. § 196.491(3)(d)(4), the plant must not have undue adverse impact on other environmental values such as, but not limited to:
  - Ecological balance
  - Public health and welfare
  - Historic sites
  - Geological formations
  - Aesthetics of land and water
  - Recreational use
3. Under Wis. Stat. § 196.491(3)(d)(6), the plant must not unreasonably interfere with the orderly land use and development plans for the area involved.

4. Under Wis. Stat. § 196.491(3)(d)(7), the plant must not have a material adverse impact on competition in the relevant wholesale electric service market.

All of the items listed above have been considered and described at least to some extent in this EIS. Since the proposal is a wholesale merchant plant, the Commission may not consider the effects of alternative sources of supply, engineering or economic factors, or PVG's profitability. The Commission may need to discuss the potential effects of the project on Wisconsin's energy supply. Economics may need to be considered to determine direct or indirect impacts on safety, reliability, ecological balance, public health and welfare, orderly land use and development, and effects on competition. As such, these direct and indirect impacts have also been discussed in this EIS.

If approved, PVG may not own and operate this facility after construction. PVG has tentatively agreed to sell this project to Alliant Energy Generation (AEG). AEG would then lease the plant to an affiliated Wisconsin utility (Wisconsin Power & Light). If this business deal is finalized, the Commission must initiate another proceeding to determine if the lease agreement between AEG and WP&L is in the ratepayer's interest. Issues of need and cost would be considered.

## **ALTERNATIVE POWER PLANT LOCATIONS**

Two alternative locations have been proposed, and the process used by PVG for narrowing its choices has been described. Both sites address, to varying degrees, the public interest, environmental values, and consistency with orderly local development. However, the Commission must decide whether either this does adequately. Site selection is discussed further below.

## **ALTERNATIVE TECHNOLOGIES OR ACTIONS**

### **No Action alternative**

Taking no action on this application, by denying the application, would result in no change in the number of power plants in the state. Electricity providers would have the same sources of electricity available as they have currently.

Taking no action on this application, by not making a final Commission decision, would result in automatically granting a CPCN to the applicants under Wis. Stat. § 196.491(3)(g). The applicant would then have the option of constructing the plant at either of the two proposed sites.

### **Technology alternatives**

As discussed in Chapter 2, Wis. Stat. §§ 1.12 and 196.025 require the Commission to give priority to specific methods of meeting energy demands, to the extent these methods are "cost-effective and technically feasible." The Commission must consider options based on the following priorities, in the order listed, for all energy-related decisions:

1. Energy conservation and efficiency.
2. Noncombustible renewable energy resources.
3. Combustible renewable energy resources.
4. Nonrenewable combustible energy resources, again in the order listed.

- a. Natural gas.
- b. Oil or coal with a sulfur content of less than one percent.
- c. All other carbon-based fuels.

If the Commission identifies an option to the proposed power plant that is cost-effective and technically feasible, it could reject PVG's project as proposed.

## MARKET POWER

Wisconsin Stat. § 196.491(3)(d)7 requires the Commission, before issuing a CPCN, to find that the proposed wholesale merchant power plant facility "will not have a material adverse impact on competition in the relevant wholesale electric service market." As described in Chapter 2, the project, as proposed, would not have a material adverse competitive impact on wholesale electricity markets in Wisconsin even if AEG purchases the facility and leases it to Wisconsin Power & Light.

## COMMISSION SITE SELECTION

Two alternative sites for the plant have been proposed by PVG. If the Commission determines that both sites are reasonable and viable, it will select one of them as part of the approval of the plant.

The two sites are discussed in detail in Chapters 3 and 4. They are briefly compared in terms of public interest and environmental values in Table 5-1.

## DNR construction permits

As discussed in Chapters 1, 3, and 4, approved DNR air quality and high-capacity well permits would need to be issued before construction could begin at either site. If a site cannot be permitted, the project may not move forward. After the construction phase a number of operational permits would be required. These permits would affect air and water discharge.

## Noise

The estimated changes in ambient noise levels (during plant operation) would be slightly greater at residences near either site. Ambient sound level increases at residences near the Highway 23 Site would range from 2-4 dBA and 0-2 dBC. Ambient sound level increases at residences near the Sheboygan River Site would range from 0-3 dBA and 0-1 dBC.

## Stormwater discharge permit

A well-designed storm water erosion control plan is needed in order to protect local surface waters from erosion and discharge impacts associated with construction and operation of the proposed project. PVG has submitted a construction site and operational storm water erosion control plan for the Highway 23 Site. These plans could be modified and used for the Sheboygan River Site. The submitted plans, if implemented, would adequately protect surface waters in the area.

## Endangered and threatened species

A review of the Natural Heritage Inventory found no known occurrences of endangered, threatened, or special concern species on either proposed site.

## Historic sites

A review of listings of historic and archeological sites maintained by the Wisconsin Historic Society found no historic or archeological resources at either site.

## Wetlands

No wetlands are found on either the Highway 23 or the Sheboygan River Site.

## Agriculture

About 30 acres of agricultural land at either site would be retired from agricultural production.

**Table 5-1 Comparisons between the two proposed power plant sites for public interest and environmental values**

Siting Factor	Highway 23	Sheboygan River
Air	Appears permissible	Appears permissible
Wetlands	No wetlands affected	No wetlands affected
Endangered and threatened species	No known occurrences of endangered or threatened species	No known occurrences of endangered or threatened species.
Land use	Zoning for the property has been changed to B1 Commercial/industrial use. Some commercial development is occurring along Highway 23	Currently zoned A1 Agriculture. Land use in the area is primarily agriculture
Roads	Site access would be attained from Bridgewood Road. Two access points would be constructed. No new access road would be required. Impact to existing roads possible due to increased construction traffic. Damage would be repaired by applicant.	A new 800-foot paved access road would be built to connect County O with the plant site. Impact to existing roads possible due to increased construction traffic. Damage would be repaired by applicant.
Noise potential	Twenty-eight residences and businesses are within ½ mile of the proposed project. Only slight increase in noise at nearest residences.	Seventeen residences within one-half mile of the project. A slight increase in noise levels at nearest residences.
Visual impacts	Greatest visual impacts would be seen from the residences to the south and west. Site is currently being used for commercial purposes.	Plant would be located in a rural area where no commercial or industrial development is occurring. Some aesthetic impact to nearest residences
Historic sites	No adverse impacts expected.	No adverse impacts expected.
Electric transmission line	Interconnection access is immediately adjacent to the site. No new transmission ROW needed.	Interconnection access is immediately adjacent to the site. No new transmission ROW needed.
Natural gas pipeline	Connection to existing ANR natural gas pipeline would require a new pipeline on new ROW. Length of pipeline would be about 1,650 feet	Connection to existing ANR natural gas pipeline would be constructed within site boundary.
Water supply	Two high capacity wells and 500,000 gallon raw water storage tank. No impact to local wells expected	Two high capacity wells and 500,000 gallon raw water storage tank. No impact to local wells expected
Storm water discharge erosion control	An adequate storm water and construction site erosion control plan is required for this site. Proposed plan is adequate	An adequate storm water and construction site erosion control plan is required for this site. Plan for Hwy 23 site can be used if modified.
Wastewater discharge	Sanitary water would be conveyed via a standard septic system typical of those used in the area. Wastewater from the plant would be required to meet WPDES permit restrictions.	Sanitary water would be conveyed via a standard septic system typical of those used in the area. Wastewater from the plant would be required to meet WPDES permit restrictions.

## **ELECTRIC TRANSMISSION LINE**

As discussed in Chapters 2, 3, and 4, the project would require connection to the existing electric transmission system which is located immediately adjacent to the eastern boundaries of both sites. The interconnection would be made to an existing 345 kV transmission circuit. No new transmission ROW would be required at either site.

## **SUMMARY**

The Commission has a CPCN application before it for a wholesale merchant electric power plant. It must issue an order on whether to approve the plant, and under what conditions. If the facility is sold to AEG for lease to WP&L, the Commission would be required to initiate another proceeding to approve the financial arrangement between AEG and WP&L.



# Appendix A – Comments on the Draft EIS

## COMMENT PROCESS

The Commission and the DNR issued the draft EIS on the Power Ventures Group Project in February 2004. A 45-day comment period followed the issuance of the draft EIS. The comment period ended on April 10, 2004. Besides comments made by the applicant, seven comments were received on the draft EIS from the public. A copy of public comments, including PVG's, are included at the end of this appendix.

Commission and DNR staff considered all the comments received during the comment period in their preparation of the final EIS. It is hoped that the new information and the changes made by staff will make the final EIS beneficial for use by the Commission and other decision-makers, and to help the public prepare for the hearing on the CPCN and EIS.

The purpose of the EIS is to inform the decision-makers and the public of the proposed project and its potential consequences. The upcoming public hearing on the project will provide an opportunity for members of the public to comment on the project, policy matters, application of state law, and the Commissioners' final decisions on this project. This final EIS can serve as a background informational tool for those members of the public and other individuals who wish to testify.

## RESPONSES TO COMMENTS

All comments on the draft EIS are appreciated and were taken into consideration in the preparation of this document. A brief summary of how each comment on the draft EIS was addressed in this final EIS is included below. All the comments received follow this summary.

Comment	Action Taken
By PVG on page 1 of 5 – Water Section – Correction to the estimate of total annual water usage. Page XV of DEIS	The final EIS has been changed.
By PVG on page 1 of 5 of its comment letter, clarification in the expected use of the on-site wells. Page XV of DEIS	The final EIS has been changed.
By PVG on page 1 of 5 of its comment letter, -water section - added new information on a pump test performed after the DEIS was issued. Page XV of DEIS	The final EIS has been changed to include information on the pump test.
By PVG on page 1 of 5 of its comment letter, regarding changes in the size of the proposed natural gas pipeline – page 2 of DEIS.	Change has been made

Comment	Action Taken
By PVG on page 1 of 5 of its comment letter, regarding the date of an expected Commission order on page 3 of DEIS	The EIS has been changed to reflect the possibility that a decision might be reached in June of 2004. However the Commission has not yet scheduled a review of the hearing record. A decision date is not certain at this time.
By PVG on page 1 of 5 of its comment letter, regarding the discussion under DNR Permitting Authority – page 3 of DEIS	The DNR revised the sentence in order to clarify this permit issue.
By PVG on page 1 of 5 of its comment letter, regarding the high-capacity well approvals as described on page 3 of the DEIS.	This change was made to clarify this permitting issue.
By PVG on page 1 of 5 of its comment letter, regarding discussion of the Department of Commerce regulation found on page 3 of DEIS	This change was not made.
By PVG on page 1 of 5 of its comment letter, regarding a public meeting held in February 2003 found on page 4 of DEIS	This change was made.
By PVG on page 2 of 5 of its comment letter, regarding the discussion on air and well permits on page 5 of DEIS	This change was made.
By PVG on page 2 of 5 of its comment letter, regarding the discussion on the National Historic Preservation Act on page 5 and 6 of DEIS	This change was made as proposed by the applicant in order to help clarify the regulatory process.
By PVG on page 2 of 5 of its comment letter, regarding the discussion of compliance with the National Historic Preservation Act found on page 5 and 6 of DEIS.	This change was made not made. Conclusions of historic and archeological studies can be found in Chapters 3 and 4.
By PVG on page 2 of 5 of its comment letter, regarding Table 1-2 to delete the last row.	This change was made as proposed by the applicant.
By PVG on page 2 of 5 of its comment letter, regarding the discussion on the Size of Units and Dimensions of Proposed Plant found on page 11 of DEIS	This change was made as proposed by the applicant to reflect changes made to plant design after the DEIS had been issued.
By PVG on page 2 of 5 of its comment letter, on page 11 of DEIS regarding estimated hours of use.	This change was made as proposed by the applicant.
By PVG on page 2 of 5 of its comment letter, correction to hours of operation – Page 15 of DEIS	This change was made as proposed by the applicant.
By PVG on page 2 of 5 of its comment letter, regarding the discussion on reliability on page 15 of DEIS.	This change was not made. Commission staff believes this section is correct as originally written.
By PVG on page 3 of 5 of its comment letter, regarding the discussion on search criteria for plant sites. Page 16 of DEIS	This change was made.
By PVG on page 3 of 5 of its comment letter, regarding the discussion on chemical use found on page 21 – 22 of DEIS	This change was made as proposed by the applicant.
By PVG on page 3 of 5 of its comment letter, regarding the discussion on transmission upgrades found on page 26 of DEIS.	This change was made.



Comment	Action Taken
By PVG on page 3 of 5 of its comment letter, regarding the discussion of the transmission system upgrades found on page 26 of DEIS.	The change was not made. ATC's power flow analysis used the summer peak value of 480 MW.
By PVG on page 3 of 5 of its comment letter, regarding the discussion on page 29 of the DEIS on the Commission's legal requirements.	For clarification purposes, the suggested text, also found on page XI of the DEIS, was copied into this section.
By PVG on page 3 of 5 of its comment letter, regarding the discussion of the estimated potential emissions during operation found on page 36 of the DEIS.	This correction reflects changes made to the PVG air permit application after the DEIS was issued. This change was made as proposed by the applicant.
By PVG on page 3 of 5 of its comment letter, regarding the same change as described above.	This correction reflects changes made to the PVG air permit application after the DEIS was issued. This change was made as proposed by the applicant.
By PVG on page 3 of 5 of its comment letter, regarding the same change as described above.	This correction reflects changes made to the PVG air permit application after the DEIS was issued. This change was made as proposed by the applicant.
By PVG on page 3 of 5 of its comment letter, correction to typographical error in heading on page 40 of DEIS	This change was made.
By PVG on page 3 of 5 of its comment letter, regarding the discussion of Water Supply found on page 41 of DEIS.	This change was made in order to clarify the well approval issue.
By PVG on page 4 of 5 of its comment letter, regarding aquifers on Page 41 of the DEIS.	This change was made as proposed by the applicant.
By PVG on page 4 of 5 of its comment letter, regarding the discussion on well impacts on page 41 of the DEIS	This change was not made as suggested. PSC and DNR staff has added information related to a pump test performed in March 2004.
By PVG on page 4 of 5 of its comment letter, regarding the well impacts and pump tests on page 42 of the DEIS	PSC and DNR staff has added information related to a pump test performed in March 2004.
By PVG on page 4 of 5 of its comment letter, regarding the discussion of residential and municipal wells on page 42 of the DEIS.	PSC and DNR staff has added information related to a pump test performed in March 2004
By PVG on page 4 of 5 of its comment letter, regarding the discussion of Construction Impacts on page 44 of the DEIS	This change was made as proposed by the applicant.
By PVG on page 4 of 5 of its comment letter, regarding the discussion of construction impacts on page 44 of the DEIS.	The final EIS has been changed to reflect the substance of this comment.
By PVG on page 4 of 5 of its comment letter, suggesting rewording of construction impact section on outlet structures.	The final EIS has been changed to reflect the substance of this comment.
By PVG on page 4 of 5 of its comment letter, suggesting moving a sentence to a new location within the Construction Impacts section on page 44 of DEIS	The change has been made.
By PVG on page 5 of 5 of its comment letter, regarding DOT versus FAA approval.	The change has been made.
By PVG on page 5 of 5 of its comment letter, regarding FAA determination of hazard for the proposed project on page 49 of DEIS	The FEIS has been changed to reflect the FAA decision.

Comment	Action Taken
By PVG on page 5 of 5 of its comment letter, regarding low frequency sound and vibration found on page 58 of DEIS.	The FEIS has been changed to reflect the substance of this comment.
By PVG on page 5 of 5 of its comment letter, regarding a conclusion related to the impact of noise increases from the project found on page 58 of the DEIS.	This change has not been made. The text is adequate as written.
By PVG on page 5 of 5 of its comment letter, regarding construction impacts found on page 76 of the DEIS.	The FEIS has been changed to reflect the substance of this comment.
By PVG on page 1 of 1 for its comment letter dated April 8, 2004 regarding the discussion on water and well pump testing found on Page XV of the DEIS	The FEIS has been changed to include details of the pump test performed.
By PVG on page 1 of 1 for its comment letter dated April 8, 2004 regarding impacts to residential and municipal wells found on page 72 of the DEIS	The FEIS has been changed to include details of the pump test performed.
Letter from M. Pyne, president of IBEW Local 965. Concern for WP&L operation and maintenance of facility.	An application by AEG and WP&L for authority to purchase the proposed project has not been filed with the Commission. Commission staff has no data on WP&L's staffing plans for this project.
Letters from: David and Nancy Schueffner, Gary and Roberta Meyer, Jane Klettke, Terry Debbink and Thomas Mueller – Concern expressed about one or several of the following issues: noise, proximity to the Sheboygan River, impacts to local wells, pollution, and traffic.	Noise data available to Commission staff indicates that the noise from the proposed plant at the nearest residences would be approximately 60dBA. See Figures 3-4 and 4-4 of EIS. Noise from the proposed plant is not expected to noticeably increase the ambient noise environment. Information on post-construction noise regulatory options has been added to the EIS. Impacts to local wells are not expected however, the DNR is currently reviewing pump test data. At present, based on a relatively low pumping rate, limited hours of use, and the depth of the proposed well, our best estimate is that impacts to local wells is unlikely. Additional information on well impacts has been included. Impacts to the Sheboygan River can be mitigated by proper construction and erosion control methods. Additional information has also been added on air quality.
Dennis Weinhold – concerned about interference with aircraft, hot water discharge to the Sheboygan River, natural gas additions to the Beechwood station. Would a new ROW easement for the gas lateral be required?	Thermal plume and aircraft safety are covered in Chapter 3 under the Sheboygan County Memorial Airport. Simple-cycle plants do not discharge heated water to the environment. No additions will be required to the Beechwood Station. Any new ROW would be accompanied by a new ROW easement agreement.



March 29, 2004

Mr. Udaivir Sirohi  
Public Service Commission of Wisconsin  
610 North Whitney Way  
Madison, WI 53707-7854

Power Ventures Group, LLC  
Comments on the Draft EIS for Sheboygan Energy Facility  
(Docket No. 05-CE-131)

---

Dear Mr. Sirohi,

This letter is submitted to provide Power Ventures Group's (PVG) comments on the Draft Environmental Impact Statement (DEIS) for the Sheboygan Energy Facility project owned by Sheboygan Power, LLC. The attached document lists by page number in the DEIS, our comments and suggested changes/clarifications to the DEIS. Some of our comments are based on information that has been compiled after the DEIS was issued. We have attempted to provide a justification of our reason for the changes.

We appreciate your attention to this project and if you have any questions about the comments we've submitted please contact me at (816) 822-3911.

Sincerely,

Tim Barton  
Project Manager, Environmental

cc: Bill Fannucchi (PSC)  
Steve Ugoretz (WDNR)  
Jeff Greig (PVG)  
Files – Project Number 25655-3.25

enclosure

9400 Ward Parkway  
Kansas City, Missouri 64114 3319  
Tel: 816 333-9400  
Fax: 816 333 3690  
www.burnsmcd.com

**Comments on Draft Environmental Impact Statement for  
Sheboygan Energy Facility (Docket 05-CE-131)**

Submitted by Power Ventures Group, LLC.

1. Page XV – Water, Paragraph 1, Line 4: The total annual water usage for the plant is estimated at approximately 7,567,200 gallons. *Comment: Reference is made to a total annual water use of 7,531,000 gallons. The estimated total annual water use including offline turbine washing (36,000 gallons) is 7,567,200 gallons as referenced on pages 20, 41 and 72.*
2. Page XV – Water, Paragraph 1, Line 2: ...well would be used at a time with the second well being reserved as a backup. The operation of the wells would be alternated to keep each well in working condition. *Comment: Suggested revision to text to clarify the operation and cycling of the two wells.*
3. Page XV – Water, Paragraph 1, Line 8: PVG recently constructed a test well and performed a 24-hour pumping test. They are currently analyzing the results in an effort to better define the aquifer characteristics in the area and to better predict whether operation of the facility wells may have an impact on nearby domestic wells. Preliminary results indicate that there were no impacts to area wells during the pumping test. PVG is willing to repair or replace any damage it causes to domestic wells within one-half mile of the project. *Comment: Suggested revision to text based on preliminary results of pumping test.*
4. Page 2 – Paragraph 2, Line 6: Natural gas would be supplied to the Highway 23 Site by a new 16-inch pipeline lateral connected to an existing interstate natural gas pipeline... *Comment: ANR's current design plans are based on a single 16" gas pipeline for natural gas supply to the facility. Same comment for Page 63.*
5. Page 3 – Proposed Schedule, Line 4: Commission decision and order June 2004. *Comment: PVG suggests changing the Commission decision and order to June instead of July to correspond to the expectation that construction will begin in June once the order is issued and the hope that the process can be completed in an expedited time frame.*
6. Page 3 – DNR Permitting Authority, Line 4: The primary DNR approval needed before power plant construction may begin is the construction permit for a new source emitting significant quantities of air pollutants. *Comment: Since "significant" is a defined amount of an air pollutant triggering an air permit threshold limit and often used with modifications, PVG feels this wording either needs to be stricken or "significant" needs to be defined.*
7. Page 3 – DNR Permitting Authority, Line 5: The DNR must issue high capacity well approvals before the construction of the wells can begin. *Comment: This revision was addressed in DNR comments submitted March 5, 2004.*
8. Page 3 – Department of Commerce, Line 4: ~~Commerce does not review storm water management plans and does not conduct site inspections during construction.~~ *Comment: This sentence may confuse the reader and does not define who would be responsible for site inspections. PVG suggests deletion of this sentence.*
9. Page 4 – Public Participation Opportunities, Line 6: A public information meeting regarding the project was held in the town of Sheboygan Falls in February 2003 to provide local residents with information on the proposed project. *Comment: Suggested addition to text and the last sentence appears to be erroneous.*

**Comments on Draft Environmental Impact Statement for  
Sheboygan Energy Facility (Docket 05-CE-131)**

Submitted by Power Ventures Group, LLC.

10. Page 5 – Public Involvement Through Other Regulatory Agencies, Line 1: A high-capacity well permit and an air pollution control permit are part of this project review. ~~A~~The air construction permit is required before construction can begin and the high-capacity well permit is required before construction of the wells can begin. *Comment: This is a clarification of the timing of the high-capacity well permit construction and consistent with Item 7.*
11. Page 6 – National Historic Preservation Act Compliance, Paragraph 1: Under Section 106 of the National Historic Preservation Act, the Wisconsin Historical Society (WHS) must be consulted by the lead federal agency, if the agency determines the project is an undertaking as defined in 36 CFR 800.16(y). The agency is responsible for initiating consultation with ~~must~~ also contact any Native American peoples that may have an interest in the area affected by the project and any other individuals that may be affected by impacts to historical or archaeological properties that are listed or eligible for listing on the National Register of Historic Places (NRHP). The agency must also consider Traditional Cultural Properties (TCP) when determining impacts. If an adverse effect is determined, treatment of the area of potential affect would be the subject of a memorandum of agreement among all the interested parties. *Comment: PVG suggests rewording of this paragraph to clarify when Section 106 would be triggered.*
12. Page 6 – National Historic Preservation Act Compliance, Paragraph 2: A review of state historical and archaeological databases and pedestrian surveys by qualified archaeologists have discovered no known occurrences of historic resources on or near either site. If cultural materials are discovered during construction, all work would cease within 50 feet of the find and the State Historic Preservation Officer and a qualified archaeologist will be contacted immediately to determine the significance of the find.
13. Page 6 – State Interests, Table 1-2: *Comment: Delete reference to Department of Transportation because a High Structure Permit is not required (see further discussion under Item 36).*
14. Page 11 – Size of Units and Dimensions of Proposed Plant, Insert at end of first paragraph: PVG has decided to enclose the combustion turbines in a generation building that will improve aesthetics and decrease expected sound levels. *Comment: PVG has made a slight alteration to the layout as submitted to the PSC to include enclosing the combustion turbines in a generation building. This will improve maintenance capabilities, aesthetics and decrease expected sound levels.*
15. Page 11 – Plant Fuel, Line 4: At an estimated 1,795 hours of operation per year...
16. Page 15 – Expected Hours of Operation, Expected Outages, and Expected Plant Life, Line 3: Normal operation of the plant would be expected to total approximately 1,795 hours per year.
17. Page 15 – Reliability, *Comment: Please insert a conclusion associated with the section on reliability.*

**Comments on Draft Environmental Impact Statement for  
Sheboygan Energy Facility (Docket 05-CE-131)**

Submitted by Power Ventures Group, LLC.

18. Page 16 – Search Criteria, Line 7: The two site alternatives, identified by PVG in 2002, were selected based on the following specific attributes. *Comment: Suggested wording change to clarify that the two sites were selected prior to any indication that Sheboygan County would eventually become a non-attainment county.*
19. Page 21-22 – Chemical Use, Line 5: ...and would be stored and disposed of properly in compliance with applicable federal, state and local requirements, to prevent soil contamination. *Comment: Suggested wording change to clarify compliance with applicable regulations.*
20. Page 26 – Transmission System Upgrades, Paragraph 2, Line 1: ATC performed a power flow (thermal) analysis using its projected 2004 summer peak load and assuming delivery of electricity from the PVG plant to WE Energies service territory.
21. Page 26 – Transmission System Upgrades, Paragraph 3, Line 1: With only the PVG plant producing power at its summer output of 530 MW....
22. Page 29 – The Commission’s legal requirements..., Insert after second paragraph: As mentioned previously, the project may not be operated as a merchant plant. PVG is presently negotiating to sell the proposed project to AEG. AEG would own the power plant but would then lease the project to WP&L, who would operate the power plant. WP&L is affiliated with AEG and is a Wisconsin utility. If this arrangement is finalized, the Commission, for the purpose of protecting ratepayer interests, would open a proceeding to review and approve, reject, or modify the arrangements between AEG and WP&L. *Comment: Suggested wording change to clarify that further information regarding DSM may be required at a later date.*
23. Page 36 – Estimated Potential Emissions During Operation, Paragraph 1, Line 3: ...while operating at 60 percent load and above year-round. *Comment: Sixty (60) percent reflects the corrected number that was submitted in PVG’s air construction permit application.*
24. Page 36 – Estimated Potential Emissions During Operation, Paragraph 4, Line 4: ...hydrocarbon emissions at 60 percent load and above. *Comment: Sixty (60) percent reflects the corrected number that was submitted in PVG’s air construction permit application.*
25. Page 36 – Estimated Potential Emissions During Operation, Paragraph 6, Line 4: ...hydrocarbon emissions at 60 percent load and above. *Comment: Sixty (60) percent reflects the corrected number that was submitted in PVG’s air construction permit application.*
26. Page 40 – Impacts During the After Construction: Revise heading to “Impacts During and After Construction.”
27. Page 41, Water Supply – High Capacity Wells, Line 1: Because the combined capacity of the two wells is greater than 70 gpm, each well will require a DNR High-Capacity Well permit. *Comment: Suggested wording change to clarify why high-capacity well permits are required, even though the pumping rate for each well (61 gpm) is below the high-capacity threshold of 70 gpm.*

**Comments on Draft Environmental Impact Statement for  
Sheboygan Energy Facility (Docket 05-CE-131)**

Submitted by Power Ventures Group, LLC.

28. Page 41, Residential and Municipal Wells, Paragraph 1, Line 3: The greater depth should enable the facility to draw water from deeper portions of the aquifer than those used by shallower residential wells. *Comment: Suggested wording change because it is all one aquifer.*
29. Page 41, Residential and Municipal Wells, Paragraph 1, Insert at end of paragraph: However, recent pumping test results suggest there will be no impact to area wells. *Comment: Suggested wording change based on recent pumping test.*
30. Page 42, Residential and Municipal Wells (cont.), Paragraph 1, Line 2: ...the depth of the project's wells, on-site water storage, ~~and~~ limited hours of operation, and recent pumping test results, impacts to local wells are not anticipated. *Comment: Suggested wording change based on recent pumping test.*
31. Page 42, Residential and Municipal Wells (cont.), Paragraph 3, Insert at end of paragraph: During the recent pumping test, water levels observed in a 600-foot deep water supply well located approximately one-mile from the project site, indicated no adverse impacts at that distance. *Comment: Suggested wording change based on recent pumping test*
32. Page 44 – Construction Impacts, Paragraph 4, Line 3: ...products would be provided as required by federal and state laws including 40 CFR Part 112 Oil Pollution Prevention and WI Department of Commerce Chapter 10 Requirements. *Comment: Suggested wording change to include reference to state requirements.*
33. Page 44 – Construction Impacts, Paragraph 4, Move paragraph to between Paragraph 4 and Paragraph 5 of Post-construction (operational) stormwater management and erosion control on Page 45 with the following suggested revisions: ~~The drainage swells and detention pond would be maintained for use when the facility becomes operational.~~ Additionally, secondary containment for equipment and facilities that contain petroleum products would be provided as required by federal and state laws including 40 CFR Part 112 Oil Pollution Prevention and WI Department of Commerce Chapter 10 Flammable and Combustible Liquids. *Comment: Relocation of the text is suggested because an oil/water separator will not be installed for use during construction. Also, suggested wording change to include reference to state requirements.*
34. Page 44 – Construction Impacts, Paragraph 5, Lines 4-7: *Comment: Reference is made to a modification of the outlet structure for the detention pond. On January 19, 2004, Burns & McDonnell provided a revised outlet structure design to Susan Beaumier at the DNR. She responded that the redesign complied with DNR BMP standards. This paragraph should be reworded accordingly.*
35. Page 45 – Post-Construction (operational) storm water management and erosion, Paragraph 4A: The last sentence should be moved to the end of Paragraph 4, Page 44 – Construction Impacts. *Comment: The sentence refers to weekly inspections during construction, not operation.*

**Comments on Draft Environmental Impact Statement for  
Sheboygan Energy Facility (Docket 05-CE-131)**

Submitted by Power Ventures Group, LLC.

36. Page 49 – Sheboygan County Memorial Airport, Paragraph 2, Line 3: ~~The DOT Bureau of Aeronautics~~ FAA has determined that the 75-foot tall stacks would not constitute an obstruction hazard. *Comment: The FAA provided “Determination of No Hazard to Air Navigation” letters on March 11, 2004 and March 23, 2004. The DOT Bureau of Aeronautics High Structure Permit would only be required if a hazard to air navigation had been determined by the FAA or if the stacks are greater than 150 feet tall [Wisc. Stats. 114.135(7)]. Burns & McDonnell’s conversations with Gary Dikkers confirmed that High Structure Permits are not required for this project.*
37. Page 49 – Sheboygan County Memorial, Paragraph 3, Line 2: ~~The FAA could require marking and lighting once or more stacks. The FAA is currently reviewing the project. The FAA has issued a “Determination of No Hazard to Air Navigation” for the three stacks at the Highway 23 Site.~~ *Comment: Suggested wording change based on updated information provided by the FAA.*
38. Page 58 – Low Frequency Sound and Vibration (cont.), Line 1, ...sound waves in the frequency range below 40 Hz, if high enough in magnitude and energy (75-80 dBC), can couple with frame building walls and windows and cause vibration. The low frequency vibration for the project was evaluated and found to be below the 75-80 dBC levels in the low frequency range (16-31.5 Hz). *Comment: Suggested wording change to clarify the low frequency vibration analyzed in the noise study. Same wording change requested for Sheboygan River Site (Page 88).*
39. Page 58 – Expected Noise Impact, Paragraph 1, Line 9, Insert at end of paragraph: Therefore, increases in noise due to the project are expected to be barely noticeable. *Comment: Suggested wording change to clarify changes in noise.*
40. Page 76 – Construction Impacts, Paragraph 4, Move paragraph to between Paragraph 3 and Paragraph 4 of Post-construction (operational) stormwater management and erosion control on Page 77 with the following suggested revisions: ~~The drainage swells and detention pond would be maintained for use when the facility becomes operational.~~ Additionally, secondary containment for equipment and facilities that contain petroleum products would be provided as required by federal and state laws including 40 CFR Part 112 Oil Pollution Prevention and WI Department of Commerce Chapter 10 Flammable and Combustible Liquids. *Comment: Relocation of the text is suggested because an oil/water separator will not be installed for use during construction. Suggested wording change to include reference to state requirements.*





April 8, 2004

Mr. Udaivir Sirohi  
Public Service Commission of Wisconsin  
610 North Whitney Way  
Madison, WI 53707-7854

PUBLIC SERVICE COMMISSION  
OF WISCONSIN  
MADISON, WISCONSIN 53707-7854  
TEL: 608/261-3100 FAX: 608/261-3101  
WWW.PSC.WISCONSIN.GOV

Power Ventures Group, LLC  
Comments on the Draft EIS for Sheboygan Energy Facility  
(Docket No. 05-CE-131)

Dear Mr. Sirohi,

This letter is submitted to provide Power Ventures Group's (PVG) comments on the Draft Environmental Impact Statement (DEIS) for the Sheboygan Energy Facility project owned by Sheboygan Power, LLC. The attached document lists by page number in the DEIS, two comments in addition to the comments submitted on March 29, 2004, as suggested changes/clarifications to the DEIS. These comments are based on information that has been compiled after the DEIS was issued. We have attempted to provide a justification of our reason for the changes.

We appreciate your attention to this project and if you have any questions about the comments we've submitted please contact me at (816) 822-3911.

Sincerely,

Tim Barton  
Project Manager, Environmental

cc: Bill Fannucchi (PSC)  
Steve Ugoretz (WDNR)  
Jeff Greig (PVG)  
Files – Project Number 25655-3.25

enclosures

9400 Ward Parkway  
Kansas City, Missouri 64114-3319  
Tel: 816 333-9400  
Fax: 816 333-3690  
www.burnsmcd.com

**Comments on Draft Environmental Impact Statement for  
Sheboygan Energy Facility (Docket 05-CE-131)**

Submitted by Power Ventures Group, LLC.

1. Page XV – Water, Paragraph 1, Line 8: PVG recently constructed a test well at the Highway 23 Site and performed a 24-hour pumping test. They are currently analyzing the results in an effort to better define the aquifer characteristics in the area and to better predict whether operation of the facility wells may have an impact on nearby domestic wells. Preliminary results indicate that there were no impacts to area wells during the pumping test. PVG is willing to repair or replace any damage it causes to domestic wells within one-half mile of the project. *Comment: Suggested revision to text based on preliminary results of pumping test.*
2. Page 72 – Residential and Municipal Wells, Paragraph 2, Line 10: Additionally, PVG recently performed a 24-hour pumping test at the Highway 23 Site and observed no impacts to area wells that were monitored during the test. The same aquifer would be targeted for groundwater supply at the Sheboygan River Site, with well depths in the same range as at the Highway 23 Site. It is anticipated that impacts to wells in the vicinity of this site would be also be minimal, as predicted (and confirmed during aquifer testing) at the Highway 23 Site. *Comment: Suggested revision to text based on preliminary results of pumping test. Also, move the last sentence of this paragraph before this suggested revision to the text (see attached PDF file).*

PUBLIC SERVICE COMMISSION OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCE

## Water resources

No navigable drainage ways or streams are located within the project area boundaries of the Sheboygan River Site. The Sheboygan River does; however, flow adjacent to the site's northwest and southwest corners and some of the surface water that falls on the site is conveyed directly into the Sheboygan River. The Sheboygan River is not listed as a trout stream or an Exceptional or Outstanding Resource Water.

### Water supply – high capacity wells

As described in Chapter 2, the proposed facility would install two high-capacity wells on site. Each well will require a DNR High-Capacity Well permit. Only one well would be used during the operation of the plant with the second well being reserved as a backup in the event the first well fails. The primary use for water at the proposed facility would be to increase the operating efficiency of the turbines in warm weather. Turbine efficiency can be improved by using either evaporative cooling or inlet fogging. PVG proposes to use evaporative cooling to increase turbine efficiency. This process would use water at a rate of about 61 gpm) during peak load. Evaporative cooling would be used only when the ambient temperature is greater than 59°F. Other uses for water at the proposed plant include sanitary water, drinking water, and process water (compressor and turbine washing). The total annual water usage for the plant is estimated at approximately 7,567,200 gallons.

### Impacts of well construction and water use

#### Surface waters

No springs were identified at the site. However, the Sheboygan River is within 225 feet of the site. It has been assumed for both sites that impermeable layers would be present above the project well's producing zone. Combined with a relatively low average pumping rate; PVG anticipates no adverse impacts to surface water bodies.

#### Residential and municipal wells

PVG has not conducted a complete aquifer test at this site. However, this site is located only on a glacial till deposit that well impacts will be similar.

Additionally, PVG recently performed a 24-hour pumping test at the Highway 23 Site and observed no impacts to area wells that were monitored during the test. The same aquifer would be targeted for groundwater supply at the Sheboygan River Site, with well depths in the same range as at the Highway 23 Site. It is anticipated that impacts to wells in the vicinity of this site would be also be minimal, as predicted (and confirmed during aquifer testing) at the Highway 23 Site.

The nearest individual well is approximately 1,500 feet from the project well sites. Residential wells in the project area typically range from 100 to 300 feet in depth. The project wells would be between 500 and 600 feet deep. The greater depth should enable the facility to draw water from deeper aquifers than those used by shallower residential wells. Based on transmissivity and storage values derived from a wellhead protection plan prepared by Rust Environmental for the Town of Sheboygan Sanitary District 3, the DNR estimates that the impact from wells located at the Highway 23 Site could be in the range of 2.2 to 3.6 feet after 365 days of pumping by the proposed facility at the nearest private well. For this analysis, it has been assumed that the same would be true for wells at the Sheboygan River Site. The values from this study may or may not be significant depending on the depth of the private well and the level at which the pump intake is installed. ~~Since the conclusion that no impact is likely is uncertain at this time, PVG has proposed to conduct a pump test and to construct a mathematical model in an effort to better define the aquifer characteristics in the area and to be better able to predict whether operation of the facility's wells could have an impact on nearby domestic wells.~~ This estimated impact is a worst case scenario because the estimated hours of operation for the facility ranges between 1,200 and 1,800 hours per year which is equivalent to between 50 and 75 days of pumping.

**From:** IBEW965  
**To:** udaivirsingh.sirohi@psc.state.wi.us  
**Sent:** Tuesday, March 09, 2004 6:19 PM  
**Subject:** Power Ventures Group Power Plant, Sheb Falls, WI

Dear Sir,

My name is Michael J. Pyne and I am the President of IBEW Local Union # 965 in Madison, WI. Our Local Union represents the unionized workers at Alliant Energy - Wisconsin Power and Light. There are currently about 1,435 members that are represented by Local 965 who work for Alliant Energy - WP&L in Wisconsin.

The announcement of the Sheboygan Falls Gas Fired Power Plant has brought some concerns within Local 965 on the operation and maintenance of such a proposed unit. This plan that Alliant Energy will lease this plant leaves us some concerns on operation and maintenance of such a facility. We have members that currently work for Alliant Energy - WP&L at their Edgewater Coal Fired Plant in Sheboygan, WI and some of these same members also operate, monitor and maintain the four units at the South Fond du Lac Sub in Fond du Lac, WI.

Local 965 would like to be considered a party to this venture and would be interested in participating in the hearings and the proceedings on this decision, due to the fact it will have a direct effect on the members of Local 965 and their day to day work. If you should have any questions please feel free to contact me.

Mike Pyne, President  
IBEW Local 965  
1602 S. Park St.  
Madison, WI. 53715  
608-259-2400

March 15, 2004

Udaivir Singh Sirohi: Public Service Commission of Wisconsin  
P.O. Box 7854  
Madison, WI 53707-7854

Dear Udaivir Singh Sirohi:,

DOCKET NUMBER 05-CE-131

SHEBOYGAN FALLS PROPOSED POWER PLANT ENVIRONMENTAL AFFECT

As a resident on a Century Farm in the general neighborhood of the proposed peak power plant, we would like to have some input into this process. We have talked to two members on the Sheboygan Falls Town Board about our concern. Our concern is that we feel that the definition of the allowable noise level should not be tied to the noise of Highway 23. We believe that the maximum allowable noise should be less than 65 dBa at the power plant property lines. Country home dBa academic definition is 30 and city home is 40.

Highway 23 was built through the Schueffner and the Strauss Farm under Eminent Domain and not by the choice of Harry and Pearl Schueffner, David's parents. The noise level and traffic is highest in the summer when this plant would be used. An eighteen wheeler coming down Highway 23 from the west at 3 A.M. can sound like an airplane coming into our house because of speed and the Doppler affect.

Without a vote or any discussion, we have a Bemis Plant on highway 32 that is to the East of our farm which makes a high level squeal at all hours of the day and night. It has awakened us out of a sound sleep many times or kept us from going to sleep particularly in summer, when we have our windows open and the workers have the big plant doors open.

One report we saw on this power plant proposal said that the noise level would be no higher than the sound of the traffic on 23. **We do not consider this a satisfactory definition for what is acceptable noise in a rural area.** Although we know this power plant would be good for the revenue of the Town of Falls, we would like the definition of the noise level to be in terms of allowable decibels which would not squeal or that we might not even hear at the several mile distance of our home.

Sincerely,

*David M. Schueffner*  
*Nancy W. Schueffner*

David & Nancy Schueffner  
920-467-1444  
N5761 Meadowlark Road, Sheboygan Falls, 53085



**From:** Dennis Weinhold  
**Sent:** Tuesday, March 16, 2004 1:05 PM  
**To:** Sirohi, Udaivir Singh PSC  
**Subject:** EIS for Proposed Sheboygan Falls Power Plant

Hello,

I have opened the suggested web address for access to the EIS for the proposed Sheboygan Falls Plant. How do I find the actual document for my review?

My initial concerns are placed into three categories

Will the steam and exhaust gases interfere with aircraft approaching the nearby airport? (Ice) The primary approach glide-path appears to be very near or down-wind of the proposed plant.

Will the required water used for generator cooling be extracted from wells? Will the hot water be discharged to the nearby Sheboygan River? Will the hot water be cooled to the same or less temperature of the river?

Will the natural gas fuel require the installation of additional line capacity from the Beechwood station? Would this result in compensation for easement access along the gas-line right-of-way?

Thank you for your time.

Dennis Weinhold, a resident of Sheboygan County

Page 1 of 1

**From:** gar  
**Sent:** Saturday, March 27, 2004 9:02 AM  
**To:** Sirohi, Udaivir Singh PSC  
**Cc:** Fannucchi, William PSC; Steven Ugoretz  
**Subject:** docket 05-ce-131 power venture group generation project

Dear Udaivir Sirohi,

We are writing this letter in regards to the generation project docket number PSC 05-CE-131 in Sheboygan Falls Wisconsin on highway 23 and the Alpine Road river site. My husband and I are not in favor of this project. We are in the process of building a house on Alpine Road and do not want the noise or the possibilities of our well going dry because of the generation plant. We already have the airport near by and do not want the extra noise from the humming of the turbines, and especially do not want the pollution from the gas fueled burners, or the extra trucking traffic.

With all the red tape we had to go through to build our house on the river I am very surprised to find out that there would even be a possibility of you being able to build a power plant near the river, I guess it just goes to show that money can buy you anything.

I also understand that this generation plant is really not needed at this time, so please find somewhere else where it would be wanted.

Sincerely,  
Gary and Roberta Meyer  
W6141 Alpine Road  
Sheboygan Falls WI. 53085

**From:** Klettke Family  
**Sent:** Wednesday, April 07, 2004 5:34 PM  
**To:** Sirohi, Udaivir Singh PSC  
**Subject:** Power Ventures Group Power Plant

April 7, 2004

Udaivir Singh Sirohi  
Docket Coordinator  
Public Service Commission of Wisconsin

Dear Mr. Sirohi,

Thanks for sending me the information about noise issues and well use impacts of the proposed Power Ventures Power Plant under consideration in the Town of Sheboygan Falls. I have shared the information with one our neighbors and she, in turn, notified me of a pre-hearing conference and hearing to be held at the Sheboygan Falls City Hall on May 25, 2004. We will try to attend one of the meeting times.

First, let me say that we are not opposed to the construction of the proposed power plant. Our energy has to come from somewhere and the potential sites are logical locations for such a project. No one likes to have this type of construction in their backyard and I do feel sorry for those with homes close to the two sites. I'm sure their property values and quality of life will go down. We live on Meadowlark Rd., south of Hwy. 23 in the Town of Sheboygan Falls and hopefully far enough away to avoid the downsides of having such a facility in the community. I know the Town of Sheboygan Falls and Sheboygan County will gain financially by the new power plant and that is always good news for tax payers.

Our concerns focus especially on potential noise pollution, and the impact on local wells and the Sheboygan River from such a facility. To give you some background, we are quite sensitive to noise issues because of the construction of a hammer mill nearby that does not operate quietly as promised. Homeowners on our road have lived with the banging, roaring, etc. noises of the mill's operation ever since. Our peaceful countryside is no longer. We don't wish to be sandwiched between two noisy facilities. On page 58 of the Public Service Commission Environmental Review of the Highway 23 site, paragraph 4, it says that "noise from the project can be limited by installing and maintaining sound attenuation devices on exhaust and intake structures". Will sound attenuation devices be installed and maintained on the Power Ventures Power Plant? What will be done in the future if the power plant is noisy?

The well issue is also important to local homeowners. When reading the environmental review, I notice statements like: "Based on the depth of the project's wells, on-site water storage, and limited hours of operation, **impacts to local wells are not anticipated**" (page 42). What if private well problems do occur? How does the private well owner prove that the high capacity well is the problem other than by saying that prior to the power plant their well was fine and afterward it wasn't? We've been experiencing multiple years of drought and lowering



water tables. Will the water drawn from the power plant negatively impact private wells if the water tables continue to drop due to extended drought? Power Venture Group agrees to replace or repair any private water supply well **within one-half mile** of the project site that has been negatively and materially impacted by the construction. Later in the same paragraph, Wisconsin case law states that if a private well owner can demonstrate, **irrespective of the distance between the private well and the high capacity well**, that the high capacity well is the cause of private well problems then the high capacity well is responsible for resolving the problem. How does the private well owner demonstrate this other than to say that the quantity and/or quality of their well water is not what it was prior to the power plant's operation? Does the Power Venture Group replace/repair damaged wells within one-half mile or are they responsible "irrespective of the distance between the private well and the high capacity well", as stated later on the same page?

Will the outlet structure on the settling pond be properly designed to meet DNR BMP standards and is this adequate to assure that discharge from the power plant will not negatively affect creeks, ditches, and streams feeding the Sheboygan River? Will the discharge water heat up the water of the Sheboygan River and damage the fish, plants, and animals that depend on it?

This facility is being built as a "peaker" plant and only used for portions of the year. What approval process would have to be followed before the usage of the plant could be increased beyond what is now stated? Recently, a newspaper article stated that Power Ventures Group was starting negotiations to sell the power plant to Alliant Energy Generation who would then lease the power plant to Wisconsin Power and Light Co. If this sale is completed, would Alliant Energy Generation be able to "change the rules" agreed upon?

If possible, we will attend one of the pre-hearing conferences on May 25, 2004 and perhaps hear the answers to the issues we've raised.

Thank you.

Jane Klettke

N5648 Meadowlark Rd.

Sheboygan Falls, WI

53085

**From:** Thomas Mueller  
**Sent:** Thursday, April 08, 2004 11:42 PM  
**To:** matthew77@earthlink.net  
**Cc:** Sirohi, Udaivir Singh PSC; Barth, Linda PSC; Ugoretz, Steven M.  
**Subject:** PVG Project Input finally ;-/  
**Importance:** High

Mr. Udivar Singh Sirohi, Ms. Linda Barth, Mr. Steven Ugoretz,

Our purpose in presenting this opinion is because the opportunity was given to us, by the Public Service Commission of Wisconsin. Our first comments are in response to the Public Service Commission of Wisconsin Department of Natural Resources, Executive Summary. All comments herein are relating to Power Ventures Group, LLC (PVG) peaking power plant (Project) Highway 23 Site, and or situations relating to having the plant in our area. The Executive Summary states page XV, water use would be limited to 61 gallons per minute (gpm) during peak load, with water usage estimated at approximately 7,531,000 gallons annually. Based on data available, the proposed facility would not significantly affect nearby wells. Predictions on potential impacts to nearby residential wells suggest that negative impacts are unlikely. **"However, this conclusion is uncertain at this time"**. Thank you for the last comment that is where we are at this point.

Has the fact that there is a golf course, Sunset Hills Golf Course, W3634 Sunset Road approximately 0.26 miles from (Project) and a "super farm" Strauss family operation, N5876 Meadowlark Road about 1 ¾ miles from (Project), has this relevant item been a part of the equation of this project? Both operations would be drawing more than household use from possibly the same local aquifer?

A handout from Burns & McDonnell states the PVG facility would average 50 gallons per minute (gmp). The PSC WDNR Executive Summary states 61 gmp, during peak load. The local newspapers have different quotes on their project articles also. It makes it difficult for the neighbors and community members to accurately analyze this all for a knowledgeably accurate response to this situation with differing facts.

The Sheboygan Falls Town Board Chairman, Randy Piechl, featured in The Falls News, Wednesday April 7, 1904 states "As far as water well protection the company agreed to take care of problems with wells within one mile of the plant for the first three years. The limit is then ½ mile after three years.

Town Board Chairman Randy Piechl said that would be fair. If the wells stay OK for three years, then they should be OK (after that)."

Maybe that makes sense to someone that appears to have his vision clouded with \$\$\$\$ signs and is unable to analyze the facts more clearly. I think common sense should tell us the longer you draw from an area the chances for the cavity (aquifer in this case) contents (water) to become lesser in quantity. The replenishing of such a cavity I would think is slower naturally than the draw from the sum of a PVG facility, area resident usages, a golf course and a super farm? If the water tables are depleted, it is to late to start over and analyze is this a prudent choice?

Some questionable water usage situations have water well monitors that would help see and read what is a potentially bad choice as far as water draw areas and monitor validity to the continuation of the draw. Have there been any comments or considerations in that direction?

When I asked Timothy Easley, Senior Economic Analyst, Project Development with Burns & McDonnell. Can an aquifer go dry? He answered very softly at the initial meeting about the PVG project at our town hall "I understand they can". He must know it takes a long, long, long time if ever, he wants the PVG project to go through so he won't go there?

If PVG was serious about their commitment to the neighborhood in their venture they should show the community they are. They have lessened their proposal and added stipulations to the well problem issue. They thought initially that a 1 mile radius coverage for well problems was adequate for the situation initially. Now it is one mile radius care for problem wells for the first 3 years. And they lessened the area to deal with to ½ mile after 3 years. If PVG were going to impress the neighborhood I would think they would cover any and all wells affected by the problems resulting from their facility with no time limit. That would be a commendable and sound, in good faith business deal. It would show they were confident they had no fear of the wells failing.

Is the fact that the wells proposed to be drilled by PVG planned to be deeper than the residential wells any great feature? Why? are they mainlining into our precious resource??

The United States Geological Survey Water Resources Division.

<http://www.agilent.com/enviroment/esr/water-tables.html>

In a section: Relation of Potential Well Yields And Water Quality To Type of Glacial Deposits. This is related to our area? "Potential well yields of only 5 – 10 gallons per minute can be expected from the morainal and glacial-lake deposits in the southern and eastern parts of the basin where the deposits contain little sand and have low permeability." We do have lots of clay in this area the rainwater takes forever to drain away, this isn't necessarily a good feature for replenishing the aquifers if they are drawn from on a regular basis in the hotter summer months either, what do you think?

Also natural gas is the cleanest burning fuel yes, that is great but it also the most costly. But those that are just excited about this entire venture because of the \$\$\$ rolling in, this fact should cut into the profits possibly?

This is not a "not in our back yard issue" only. This is a plea to have you evaluate the opinion of two community members that are concerned about the welfare of our area neighbors and community in regard to our neighborhood, our resources. Water is one of many natural resources we should cherish and look long and hard at choices we are facing, and yes even see past the \$\$\$\$ offered, is this a good choice in the long run?

Respectively submitted, Mr. & Mrs. Thomas Mueller

RECEIVED

Maivir,

I have a few concerns regarding the proposed power plant in the town of Shelbogan Falls. My mother has "filled me in" on the situation as she lives near the proposed site (of course most people never want the new power plant or factory built in their back yard - but I've tried to remain objective.)

Concern number one is air quality in Shelbogan County. The headlines in the Shelbogan Press over the past couple of years have continually stated (in bold headline print) that our county has the worst ozone reading in the state of Wisconsin.

One only needs to travel east on highway 23 from a higher point in the country (near Cty TK "M") and you can see a long plume of polluted air stretching for miles over Lake Michigan from the Edgewater Generating Station. (It seems to hang there & not dissipate)

Add to this the asphalt plant output (on Hy. 23 and Cty TK "M") from March - October and the sky turns quite dirty looking. One can only imagine how things will be if another power plant is added less than a mile away. (Even a "clean" burning plant will produce output, and perhaps the gases you can't see may be the biggest problem.)

①

The state of Wisconsin <sup>recently</sup> imposed nitrous oxide limits on vehicles in Shelbogan County (and other counties where testing is done.) We are now being required to spend money on our vehicles to meet this new standard, which on many vehicles is actually not attainable. Air quality here is not the greatest.

Concern number two deals with the discharge of cooling water into the Shelbogan River. The DNR has been pushing the smaller communities in the county to get rid of their dams because they raise the water temperature too much. It sounds as if we are just adding to the problem.

Concern number three is need. With the way the manufacturing plants are running across the border (this year alone - Richardson Brothers, Diecast-Tecumseh, the loss of plastic furniture production at Bemis; not to mention the day when Kohler pulls out) I'm guessing demand has dropped.

But we will still need to pay to maintain a plant which is not always used. On our monthly utility bill in Shelbogan Falls we have either a credit or a charge each time under the P.C.A.C. column. I believe <sup>but could be mistaken</sup> this is related to consumption - if the whole city purchases a lot of power you receive a <sup>(2)</sup>

credit; if the whole city uses less you are charged an additional amount. This has skyrocketed in the last year. You turn down the <sup>electric</sup> heat and try to cut back and then are charged an additional \$37.00 because consumption is down. Go figure.

Along the line of need is also the way <sup>all of</sup> our friends and neighbors <sup>in this state</sup> approach energy consumption, especially in the summer. We are getting a bit soft and spoiled. Years ago nobody "had air". Now it comes on in the offices, stores, and homes on the first 70° day in May and stays on until October. It isn't just used for the truly hot days. And it is kept so cold in buildings in the summer, running non-stop, that people complain about being cold.

(Our maintenance guy at church continually does this, and when the "little old ladies" complained about being cold he said they could learn to bring a sweater. In August? Go figure!)

We need to refine our lifestyles somehow, or wars and rumors of war will become more common than they are now.

Udair, thank you for your time and consideration of my rambling on.

Sincerely,  
Terry Debbink ③

# Appendix B - Well Impact Resolution Procedure from Draft Conditional Use Permit (CUP) with the Town of Sheboygan Falls

## PROCEDURE FOR TOWN RESIDENTS TO RESOLVE WELL IMPACT ISSUES

1. **TOWN** resident, who must be the owner of the real property on which a subject private well is located, shall initiate the procedure by sending a written notice to:

SHEBOYGAN POWER, LLC  
Attention: Jeff Greig, Project Manager  
c/o BURNS & MC DONNELL ENGINEERING  
COMPANY, INC.  
9400 Ward Parkway  
Kansas City, MO 64114  
Telephone: (816) 822-3392

2. **SP** shall provide an informational copy of any written notice that it receives to the **TOWN's** Town Board by mailing a copy of same to:

TOWN OF SHEBOYGAN FALLS  
Attention: Town Clerk  
P. O. Box 46  
Sheboygan Falls, WI 53085-0046  
Telephone: (920) 467-1922

3. **SP** shall determine if the resident's well is located within a one mile radius of the water supply wells located at the Project. Wells located outside the one mile radius will not be considered for this abatement procedure. **SP** shall, within thirty (30) days of receipt of any notice from a **TOWN** resident, review the applicable information and advise said resident in writing that the subject well does or does not qualify for the well impact abatement procedure referenced herein.
4. **SP** shall provide the resident with a list of approved well drillers or licensed plumbers to inspect the resident's water supply well and system.
5. The resident shall have his/her well and water supply system inspected. The selected well driller or licensed plumber must provide **SP** with a well impact abatement cost estimate that includes the following information: depth of the well, size of the well casing, well construction method, pump setting, static water level, dynamic water level, and confirmation that the well and water

system are in compliance with all applicable state and local plumbing codes. **SP** shall pay for the inspection, including a water sample, in the event that the resident's well is located within one-half mile of a Project well, except that **SP** shall pay for the inspection, including a water sample, in the event that the resident's well is located within one mile of a Project well if **SP** receives a written notice prior to three years from the third anniversary of the Commercial Operations Date.

6. No well abatement shall occur until the well and water supply system are in compliance with all applicable state and local plumbing codes. Any expenses of making a well and water supply system code compliant shall be borne by the resident. If a resident well and water supply system are code compliant at the time of inspection, **SP** shall review the inspection report and conduct an investigation to confirm that the Project is the cause in substantial part of the subject well impact. Monitoring over a designated period of time may be necessary, which monitoring shall be at **SP**'s expense if the resident's well is located within one-half mile of a Project well, except as provided in Section 4(c) of this Agreement. There shall be a legal presumption that the Project is the cause of any impact to private water supply wells and systems located (i) within a one mile radius of a Project well if notice is received by **SP** prior to the third anniversary of the Commercial Operations Date and (ii) within a one-half mile radius of a Project well if notice is received by **SP** on or after the third anniversary of the Commercial Operations Date.
7. In the event the Project is the cause of a well impact required to be abated by **SP** pursuant to Section 4(c)(ii), then **SP** shall repair or replace, at its expense, the private water supply well and system.
8. In the event **SP** fails to abate any private water supply well and system impacts as required by paragraph 7 above, said resident may petition the Town Board to review the facts and circumstances surrounding said failure. The Town Board shall provide not less than ten (10) days written notice to both the resident and **SP** of the date that each party may appear before the Town Board and submit any or all information and/or documentation supporting their respective positions. In the event the Town Board determines that **SP** has failed to abate a water supply well and system impact as required by paragraph 7 above, then the Town may schedule and conduct a public hearing concerning same and take whatever appropriate legal action the Town Board determines necessary to enforce the terms and conditions of this well abatement procedure and Town Ordinances.
9. In the event that a permit is issued within a two mile radius of the Project to a third party to operate a high capacity well, the Parties shall amend Section 4(c)(ii) of this Agreement so as to prevent **SP** from inequitably bearing any costs or burdens with regard to adversely impacted private wells or the investigation thereof that would be borne in part or in whole by such new high capacity well owner or operator if such owner or operator had entered into an agreement with the **TOWN** (even if such well is not located in the **TOWN**) containing provisions substantially similar to those set forth in Section 4(c)(ii) of this Agreement.



# Acronyms

Abbreviation or Acronym	Definition
AEG	Alliant Energy Generation
ANR	ANR Pipeline Company
AVO	Average vehicle occupancy
BMP	Best Management Practices
BTU	British thermal unit
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
Commerce	Department of Commerce
Commission or PSC	Public Service Commission of Wisconsin
CPCN	Certificate of Public Convenience and Necessity
CT	Combustion turbine
CUP	Conditional Use Permit
dB	Decibels
dBA	Decibels A-weighted
dBc	Decibels C-weighted
DNR	Department of Natural Resources
DSM	Demand-side management
EIS	Environmental impact statement
EMF	Electromagnetic fields
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
GE	General Electric
GIR	Generation Interconnection Requests
GPM	Gallons per minute
GSU	Generation step-up
H <sub>2</sub> S	Hydrogen sulfide
HAP	Hazardous air pollutants
Hg	Mercury
Hz	Hertz
kV	Kilovolt – 1,000 volts
kW	Kilowatt
kWh	Kilowatt-hour
LERC	Local Emergency Response Committee
MACT	Maximum Achievable Control Technologies
mG	Milligauss
Mgd	Million gallons per day
MISO	Midwest Independent System Operator
mmBtu	Million British thermal units

Abbreviation or Acronym	Definition
MSDS	Material safety data sheets
MSL	Mean sea level
MVA	Megavolt amperes
MW	Megawatt
MWh	Megawatt hour
NAAQS	National Ambient Air Quality Standards
N <sub>2</sub> O	Nitrous oxide
NFPA	National Fire Protection Association
NOAA	National Oceanic and Atmospheric Administration
NO <sub>2</sub>	Nitrogen dioxide
NO <sub>x</sub>	Nitrogen oxides
NOI	Notice of Intent
NRHP	National Register of Historic Places
NSR	New Source Review
PAH	Polycyclic aromatic hydrocarbons
PM	Particulate matter
PM <sub>10</sub>	Particulate matter less than 10 microns in diameter
PM <sub>25</sub>	Particulate matter less than 25 microns in diameter
POI	Point of Interconnection
PPM	Parts per million
PPMDV	Parts per million dry volume
PSC or Commission	Public Service Commission
PSD	Prevention of significant deterioration
PSS	Power system stabilizers
PVG	Power Ventures Group, LLC
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-way
SEA	Strategic Energy Assessment
SHPO	State Historic Preservation Officer
SO <sub>2</sub>	Sulfur dioxide
SWPPP	Storm water pollution prevention plan
TCP	Traditional Cultural Properties
TPY	Tons per year
TSP	Total suspended particulates
USDA	U.S. Department of Agriculture
μ/m <sup>3</sup>	Micrograms per cubic meter
VOC	Volatile organic compounds
WEPA	Wisconsin Environmental Policy Act
WEPCO	Wisconsin Electric Power Company
WHS	Wisconsin Historical Society
WP&L	Wisconsin Power and Light
WPDES	Wisconsin Pollutant Discharge Elimination System
WUMS	Wisconsin Upper Michigan System